

# THE IRON AGE

THURSDAY, DECEMBER 24, 1891.

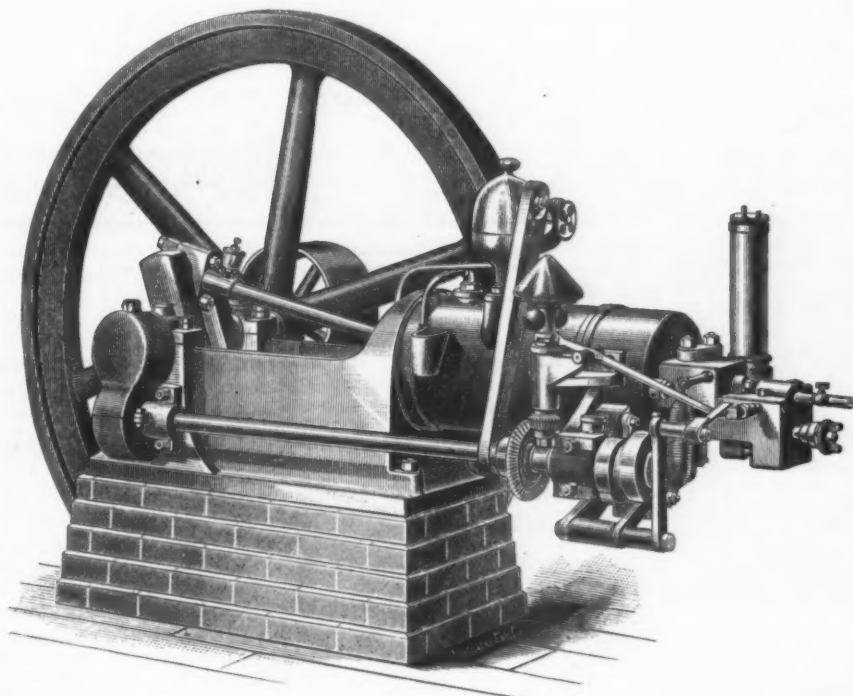
## Problem for Inventors.

In a short time the United States Government is to undertake trials of automobile torpedoes that possess, aside from their importance in military circles, a decided interest for electricians. The torpedo has become an important part of both military and naval equipment, and although—thanks to the good fortune that has preserved society from extensive wars since the development of torpedo service—there has as yet been no opportunity for observing its effects on a large scale, it can hardly be denied that the torpedo has come to stay both as a weapon of defense and offense. Such being the case, it is not out of place to call the attention of electrical inventors to the subject. As is well known to most of our readers, automobile torpedoes are of two classes, the first simply projectiles aimed and fired with more or less accuracy—generally less—from short torpedo tubes; the second composed of dirigible torpedoes, of which the Sims-Edison is perhaps the most familiar. There are, however, several others in various stages of development, and so far as has appeared the ideal instrument of destruction has yet to be invented. In other words, there are serious difficulties encountered, perhaps the most formidable being the securing of proper insulation in cables which are to be paid out behind the torpedo to furnish a supply of power. A good many experiments, and successful ones, have been tried with the Sims-Edison and other forms, but for the purpose of torpedo warfare it is not enough that a dirigible torpedo should be capable of effective operation, it must be almost certain in its results. Furthermore, the speed must be very great in order to permit of successful service. Roughly speaking, the following conditions have to be met: 1, certainty of action; 2, high speed, say 25 miles an hour or thereabouts; 3, perfect control, and 4, reasonably long range. All the dirigible torpedoes as yet devised satisfy one or more of these conditions well and others with less success. The general character of the design has embodied in each case electricity as a motive power, or simply as a means of control, or both. In the former case it has been applied either directly from the shore to a motor on the torpedo, or by a storage battery in the torpedo controlled from the shore. Other plans have embodied motive power other than electricity, generally either compressed or liquefied gas, and steering apparatus electrically controlled from the shore. With the interest that is at present taken in the development of our military and naval resources, the field is a very good one for inventors, and a careful watch on the result of the experiments

that are from time to time tried will doubtless give many a good hint for improvement, both to those who are already interested in such apparatus and to those who are alert to profit by the experience that has been gained.—*Electrical World.*

## The Otto Gasoline Engine.

The successful gasoline engine should, first of all, be so constructed as to prevent any leak of gasoline either in vapor or fluid form, and it should besides be simple in design and reliable in operation for each function belonging to the cycle of work of the engine. The Otto Gas Engine Works of Philadelphia have endeavored to meet these conditions and the engine here illustrated represents the smallest size of such an engine, which they have recently placed on the market.



THE OTTO GASOLINE ENGINE.

No separate apparatus is used for producing vapors, but the gasoline is conveyed to the engine from a supply tank placed outside of the building, and only mixes with air when it reaches the engine cylinder, where it is fired at once.

The ignition is done by a hot tube, which has been found so efficient a device with the modern Otto gas engines, and this tube is heated by a flame, similar to that used in gasoline stoves, and surrounded with the same precautions for safety. The Otto gasoline engine is also fitted for electric ignition, and the engine is so arranged that it can be furnished with either form of igniter, as desired.

Among the sizes built, some are especially designed for electric lighting, running at high speed, and are adapted for use in residences, hotels, factories, &c. Other sizes have been made of portable design and are available as farm or contractors' engines. The size illustrated is about 4 horse-power. It is stated that the running expense is very low, and as compared with gas engines the cost corresponds to that of gas at 60 to 80 cents per 1000 cubic feet, gasoline being 8 to 10 cents per gallon.

## Waterways to the West.

The enormous and rapidly growing traffic of the Lake Superior region points to the necessity for improved means of water communication between the Northwest and the seaboard. The latest proposition on record is a ship canal around Niagara Falls, as provided for by a bill just introduced in Congress. The Canadians, not to be beaten, are about to open business through their St. Clair Tunnel to perfect the system. The Dominion Government now invites tenders for a third enlargement of the Welland Canal. Thomas C. Keefer, C.E., publishes in the *Ottawa Citizen* a letter in which he speaks of the question of inland navigation as it was in 1870 and as it is now, and then continues: "But the opening of the Canadian Pacific Railway has made Lake Superior our most important lake in the near future, as it

will be the outlet for our great prairie region. We are building a lock and canal to reach this lake upon a scale far in excess of that of the Welland and St. Lawrence, which, in the nature of things, must chiefly inure to the benefit of the United States until larger dimensions are secured for the rest of our canal system. It is announced that a new St. Lawrence canal is shortly to be undertaken, and presumably upon the scale fixed in 1870, already proven to be insufficient for the great traffic of the four upper lakes. It seems to me that now is the time to reconsider the whole question of our canal dimensions, and if enlargement is shown to be necessary and probable in the near future, to build

the new canal upon the new scale. The first enlargement of the Welland was completed in 1846, but before 25 years had elapsed a second one was determined upon. This for the St. Lawrence canals is in progress yet and not likely to be completed before a second period of a quarter of a century will elapse. In view of the more rapid pace of each quarter of a century it is not to be wondered at that the time for a third enlargement has already arrived." The Waterways Convention held in Detroit last week had for its object the conversion of the cities bordering on the lakes into seaports, though located far in the interior.

The Corning Steel Company of Chicago are reported to have secured a large tract of land at Hammond, Ind., on which they propose to erect an open-hearth steel plant and a rolling mill for rolling iron and steel. The promoter of the enterprise is Frank B. Felt, who has at various times been connected with rolling mills at Pullman, East Chicago and other points. Peoria capitalists are understood to be associated with Mr. Felt in this new project.

## STEEL CAR AXLES.—IV.

BY P. KREUZPOINTNER, ALTOONA, PA.

## Testing and Inspecting Axles.

In accordance with the prevailing practice, car axles are subjected to inspection and various tests before their final acceptance by the consumer. Every engineer follows his own inclination as to manner and method of testing and inspecting. It is unfortunate that no uniformity exists on these important points. Standard uniform specifications in regard to certain main points would prove beneficial both to the consumer and producer, while it would leave ample room for special conditions.

The best and most reliable physical test for axles, for routine and commercial testing, is undoubtedly the drop test, though it is a severe test. The main point sought after in a commercial axle test is whether the axles will stand the maximum shocks and blows an axle ever receives in service. Barring wrecks, an axle has to sustain no such blows in service as are delivered by a drop test. Of course, while a drop test is severe, it does not answer the question of durability of the metal in service as to abrasion. However, to ascertain this quality, respectively the elastic limit, requires time, appliances and skill which are not often at the disposal of the consumer. A principal requisite for a reliable drop test, after the number of blows and height of fall are determined, is a solid inelastic bed or foundation and a straight square blow delivered by the drop. Shaky foundations cushion the blow, while glancing blows do not exert the force the drop is intended to deliver. The underlying idea of a drop test is to ascertain, 1, whether the axle is stiff—that is, hard enough—to carry the maximum pressure (load plus force of impact while running) imposed upon the axle, and, 2, whether there is sufficient ductility in addition to strength for the axle to bend like a spring when subject to maximum stresses and return again to its former position when the load is removed. In the drop test the engineer exceeds the maximum stresses the axle will be subjected to in service.

From a metallurgical point of view the drop test for car axles is the one most to be commended for the purpose. It strains the metal in conformity with the requirements of actual service as nearly as is possible and tends to reveal serious defects which, by any other method of test, might escape. The only drawback to the test is that it gives no insight into the elastic qualities of the metal.

The first blow of the drop strains the metal far beyond its elastic limit and the yield point. In a measure this drawback can be remedied largely by an occasional test for tensile strength and limit of elasticity of a well annealed axle. It is preferable to make such a test on an annealed axle, because in an annealed axle the elastic limit is most likely nearest to the natural elastic limit, or limit of proportionality, while in an unannealed axle the elastic limit, though pretty high up, is apt to be lowered in service by opposing and alternate stresses.\*

Next to the drop test, the tensile test of axles has some decided merits. But it is slower and a more costly test, when considered from the standpoint of commercial testing. Moreover, under the static load, as applied in a tensile machine, the metal does not show to best advantage what it would do in service. To know the strength and elongation of the metal is, of course, very valuable, and if followed as

a regular or routine work the tensile testing of axles gives a good insight into the qualities of the material used, though as a commercial test the drop test is the more effective one.

The idea of prescribing a tensile test in addition to a drop test, or bending and quenching tests, or microscopic examination of the steel, to be performed by the inspector, is not at all to be commended. It is very well and proper to do such work for the purpose of scientific research and experiments in the physical laboratory. But for commercial purposes, to do more than is necessary will result in more harm than good. Even the most experienced expert could not do justice and pay proper attention to anything more than to carry out the simplest specifications in the mill if there is not to be serious delay, friction and vexation all around. And the average inspector, who, as rule, knows little or nothing of the properties of materials, is still less able to do more than make the ordinary drop or tensile test. The idea of intrusting the inspector with etching spec-

part of making axles to observe and appreciate the effects of improper or injurious methods employed in making them. An inspector who can be "stuffed," and is the object of quiet amusement and ridicule among the mill people, will do more harm than good to his employer. Mill people like to deal with metallurgists of thorough practical and theoretical knowledge, and prefer them as judges of their products to the young and inexperienced inspector. Specifications for testing axles vary according to the opinion of engineers. The latest German specifications, adopted by the Society of German Iron Masters and the Government railways, are as follows:

1. The journals of the axles are to be filed smooth and ground with emery. The centers at the ends of axles must be conical.
2. One per cent. of the number ordered are to be at the disposition of the inspector for test.
3. The toughness—viz., ductility—of the axles is to be ascertained by drop test; the ab-

Table I.—Specifications of Axle Tests by Various Railways.

Railways and Societies.	Material for axles	Drop Test.				Tensile Test.	
		Distance of supports, in feet.	Weight of drop, pounds.	Height of fall, feet.	Deflection, inches.	Minimum Strength.	Elongation.
Union of German Railways .....	Bessemer..... Open-hearth. Crucible steel.	.....	.....	.....	.....	71,100	.....
Society German Iron Masters .....	"	5	6,000	.....	8	71,100	.....
Austrian-Hungarian Private Railways.....	"	4.4	1,100	8	6.5	Twice bent and straightened. 61,000 85,300	For Open-hearth. For Crucible.
Austrian State Railways	"	.....	.....	.....	.....	64,000	.....
Hungarian State Railways.....	"	.....	.....	.....	.....	62,000	.....
Austrian Emperor Ferdinand Northern Railway.....	"	.....	.....	.....	.....	85,000	.....
Austrian Southern Railway.....	"	5	880	16 8	8	64,000 85,000	25 Open-hearth. Crucible.
French Eastern Railway.	"	6	880	14 2	8	And straightened.	.....
Paris, Lyons, Mediterranean.....	"	4.5	880	14	15	Elongation measured in 8 inches on convex surface. 10,000	15 Guarantee 2 years.
French Southern Railway.....	"	6	880	14	8	And straightened.	.....
French Northern Railway.....	"	5	880	14	12	Straightened three times 10 6-3 elongation in 8 inches, then five blows.	68,000 20
Belgian State Railways.	"	5.5	1,500	13	.....	One blow.	.....
Spain Northern Railway.	"	7	1,100	12.5	5	And straightened.	78,000 85,000
							25 Open-hearth. Crucible.

imen and making microscopic examination of the same is especially to be deprecated most emphatically. Not that such work is of no value, but because such work requires a most thorough knowledge of the properties of metals under various conditions, a knowledge to be acquired only after many years of patient, persevering study, and comparing a multitude of metals of the same grade, and different grades.

While the microscope is destined to be a very valuable auxiliary to the expert of wide and ripe experience, and the patient plodder in the physical laboratory, in the hands of an incompetent person it becomes a source of false conclusions and errors. The inspecting of axles, while apparently a simple proceeding, nevertheless requires a keen eye to discover defects, as the axles are rolled out before the inspector and he ought to know enough of the practical

solute strength by tensile test. The test section for tensile test is 8 inches long and 1 inch in diameter. For the drop test a whole, roughly-finished axle is to be taken, showing no visible defects.

4. The lowest permissible tensile strength is to be 71,000 pounds per square inch.

Drop tests are to be made on a carefully tested drop.

Blows delivered with a 6000-pound drop. Distance of supports, 5 feet. On axles of 5 inches in diameter as many blows are given until the deflection, measured between center punch marks 4 feet 10 inches apart, is 8 inches. On axles with dimensions other than those given above, the minimum deflection is to be inversely proportional to the diameter. Axles are tested and inspected at the works.

M. Pollitzer, in his "Higher Railroad Practice," gives the specifications shown in Table I.

\* The Iron Age, March 19 and 26, 1891. "Defining the Elastic Limit."



American specifications for axles also vary considerably. Iron, open-hearth and Bessemer steel are the metals used, the latter for freight axles only if used at all. The drop test is universal. Tensile test sometimes for passenger and locomotive axles. Pennsylvania Railroad specifications are typical of American practice. Drop test for freight axles, five blows, 20 or 25 feet fall, according to size of axle; weight of drop, 1640 pounds; axles to be turned after each blow; distance between supports, 3 feet; tensile strength for locomotive driving wheel, tender, truck and passenger axles, 85,000 pounds per square inch; 20 per cent. elongation in a 2-inch section; one axle from every lot of 100 subject to test.

#### Scientific Testing.

The consumer of large quantities of axles should not be satisfied with the results of commercial testing as a quality measure. The physical properties of metals, especially of steel, the nature of which is often changed by incidental changes of details in the mill, are very complex, and it would well repay the consumer of car axles, tires and crank pins to extend his inquiry into the broader field of abrasion, resilience or elastic reaction under an assumed maximum load, resistance to crushing, effects of higher temperature (not necessarily red heat), structure, as revealed by the microscope, and chemical analyses. The results of such scientific inquiry should be booked and be charged to the credit of each maker, thus forming a summary record of the peculiarities of the steel itself for a given purpose and as a comparison between the product of each maker. It is not supposed, of course, that such high-grade work be done as a regular routine work. The uniformity of product from the same mill, which is noticed to prevail usually for longer periods until there is a change for better or worse, is favorable to scientific investigations as indicated, because it does away with the necessity of making such a test too frequently.

Raise the investigation and the investigator to a higher level and the manufacturer will follow in the new path as naturally as if drawn to it by a magnet.

While the value of a higher standard of investigation and of really scientific work cannot be measured by dollars and cents, it must not be forgotten that the development of the country brings with it a change in economic conditions, which are already felt in their effects by compelling a more economic use of our resources. Change of conditions requires change of methods. Crude methods must be refined and recast.

That there is practical, hard cash value in the results of scientific investigations of metals, as suggested, we can judge from the fact, already pointed out in these columns,\* that two similar metals having the same ultimate strength may possess different qualities as to resilience and abrasions. But both of these properties are very important factors in the wear and tear of car axles. If of two lots of 100 axles each the steel in one lot gives only 500 miles more service, other things being equal, then there is a gain of  $100 \times 500 = 50,000$  miles of service, plus the saving of work, wages and tools, of drawing and replacing worn-out axles less frequently. Fourteen new axles being needed per 100 cars per annum requires 7000 new axles per annum for an equipment of 50,000 cars. Thus the gain of 50,000 miles for one lot of axles must be multiplied 70 times, while the expense for the knowledge gained by the inquiry may have been only equal to the gain derived from the increased service of one or at the most two lots of axles.

The same benefits would be derived from an inquiry into the abrasive qualities of steel car axles. Users and makers of iron axles claim that the journals of steel axles wear faster and heat more. Granting, for the sake of argument, that this is true, then the user of steel axles, who uses them because they are cheaper, has a rich mine at his disposal if he can find out whether this is true, and by what change of structure he can increase the resistance to abrasion on the journals of his steel axles—whether compactness, a maximum density of structure obtained by hammering, is the most favorable, or what else it is. Pallitzer, in his "Higher Railway Service," relates the fact that on some railroads—for instance, on the Paris-Lyons Mediterranean Railway—journals are turned  $\frac{1}{4}$  inch larger than required size, and then are hammered to harden the surface, after which journals are finished.

Thus we see how scientific work could be made to yield valuable practical results at comparatively small expense.

#### Conclusions.

1. Steel axles, if carefully made and of the proper grade of steel, are entirely suitable for railway service.

2. Steel for car axles must possess the quality of high resistance to permanent deformation (set) and a sufficient margin of strength and ductility beyond the primitive elastic limit, or limit of proportionality, to leave a necessary safe margin of ductility if the elastic limit should be raised accidentally, which has a tendency to reduce the ductility.

3. The elastic limit of steel car axles must be high enough not to be exceeded by the limits of tensile, transverse or compression stresses of equal strength, acting on a structure alternately, if the structure is to sustain an unlimited number of such stresses. If the elastic limit, or limit of proportionality, is not high enough, fracture in detail will take place.

4. According to Woehler's law on the fatigue of metals, structures or parts of structures which have to sustain alternating stresses must have a proportional strength of 9 to 5 in comparison to structures which have to sustain stresses acting only in one direction. Car axles being subjected to alternating stresses should have a proportionally high strength.

5. The mechanical treatment of steel car axles must aim at the greatest possible homogeneity, in the sense that the continuity of the structure be not impaired or broken by blowholes, flaws, oxides or similar defects, as well as in the sense that no variation of structure should exist which would tend to produce internal strains and an irregularly distributed strength.

6. Since the careful annealing of steel tends to eliminate internal strains and is productive of uniform strength in steel by obliterating the lines of demarcation between portions of a steel structure varying in strength, therefore the annealing of car axles must be considered beneficial.

7. Other things being equal, fine "grain" indicates a higher degree of cohesion of the molecules—that is, strength—while at the same time, if the individual particles of the steel are of the proper nature, fine "grained" steel will "flow" more easily, will respond more readily to a call for immediate help, and will "cushion" the blow at the critical moment, thus preventing sudden fracture. Hence a fine "grained" steel is preferable in car axles.

8. The elastic limit should form part of the specifications for steel car axles.

9. The drop test is a satisfactory and reliable commercial test for car axles, since it is a measure of uniformity of structure and local weakness, of an excess of softness, and of the ability of the metal to transmit excessive stresses (sudden blows

and shocks) quickly from molecule to molecule, thus preventing sudden fracture.

10. The most reliable guide to the selection of proper material for structural purposes in general, and steel car axles in particular, is the most intimate knowledge of the physical properties of metals, their behavior under various conditions, and the effects of heat and work on their qualities and structure.

#### Meeting of Machinery Makers.

On the 16th inst. a meeting of prominent manufacturers of wood-working machinery was held at the Grand Pacific Hotel, Chicago. It was convened in response to an informal call to discuss the feasibility of combining their business and interests in a general company. The plan as outlined was the formation of a company with a capital of \$5,000,000 or more, to whom those desirous of so doing could transfer their plants, appliances, patents and good will, taking therefor paid-up stock in the new organization at par. Among the firms represented were the following: Connell & Dengler, Rochester, N. Y.; Glen Cove Machine Company, Brooklyn; Benjamin Machine Company, Chicago; Hoyt Bros. Company, Aurora, Ill.; Greenlee Bros. Company, Chicago; Goodell & Waters, Philadelphia and Chicago; J. S. Graham & Co., New York; Buss Machine Works, Grand Rapids, Mich.; E. & B. Holmes, Buffalo, N. Y.

In addition to these there were present several traveling representatives from other firms. These carefully noted all that took place, presumably for the benefit of their respective houses, but would take no active part in the business of the meeting.

Owing to the fact that a number of firms influential in the trade were not represented, and some of those present were hostile to the plan of operations as proposed, nothing definite was accomplished further than the preliminary organization of an association of the manufacturers of wood-working machinery of the United States for the purpose, as stated in the resolution, of meeting for the interchange of ideas, correcting of trade abuses and the forwarding of measures conducive to the general advantage.

#### The Drexel Institute.

The new Drexel Institute in Philadelphia, dedicated last week, is represented to be another Cooper Institute, revised and enlarged. Chauncey M. Depew delivered the dedication oration; ex-Attorney General Wayne MacVeagh presented the deeds of trust on behalf of Mr. Anthony J. Drexel, which were accepted by Dr. James MacAlister, president of the institute, for the Board of Trustees. "What such schools as the Drexel Institute may do for our future industrial development no man now can foresee; but it is evident that when to American native genius are added the culture and training that can be given by the best schools of industrial art, the result must be the evolution of a finer and higher class of work and the development of more artistic taste in our industries. Thus will America keep in the first rank of productive countries—first, as heretofore, in the skillful adoption of means to ends, and first, as we have not been heretofore, in the refinement and finish and æsthetic effect of the products turned out by our artisans. The opening of such a school as this marks a step in national development."

The capacity of the Southern Malleable Iron Works, at Chattanooga, Tenn., has been enlarged by the addition of a 20-ton furnace.

\* "Contraction of Area as a Quality Measure." *The Iron Age*, December 18, 1890, January 22, 1891.

## ELECTRIC RECIPROCATING ENGINE.

BY CHARLES J. VAN DEPOELE.

Through my intimate connection with the development of electrical transmission of power it occurred to me quite early in the state of the art that electricity must sooner or later be employed almost exclusively to the exploitation of mines where any business of importance was transacted.

The first thing, naturally, for the electrical engineer to do was to devise means by which he could drill the hardest rock, as well as apparatus capable of conveying the same from the mine to the place where the ore could be cheaply and economically treated. It was necessary to apply electric power to hoisting apparatus as well as to the locomotive, and the application of electric power to telpherage will play a by no means unimportant part in the future operation of mines. It was further seen that electricity must also be applied to the pumping machinery for relieving the mines of flood water. Not only has it been shown that this can practically be done by electricity, but further, it has been shown that percussion drills of all sizes can be more successfully and economically driven by electric power, especially under conditions unfavorable to either steam or compressed air. It is therefore to electric reciprocating engines that the following will be devoted.

### Reciprocating Engines.

A good many attempts have been made from quite an early date to apply the current of the dynamo electric machine to the operation of reciprocating engines for the driving of rock drills, or similar purposes, but in all the devices thus made there were either commutators or make and break of circuits, or some means for shifting the current from coil to coil to produce reciprocating motion, which, although it might appear successful experimentally, would certainly not be so in practice, especially in the operation of rock drills, where skilled labor could not be expected. It was therefore evident that simpler means were necessary in order to produce a commercially successful electro-magnetic reciprocating engine.

From a very early date in the art I experimented in that direction, and produced, as far back as 1883 and 1884, some very efficient reciprocating engines. It was not, however, until I applied the principle of

### Slowly Rising and Falling Currents.

in closed circuits, thereby eliminating the impracticable make and break devices, that I became satisfied that such machines could be made to operate percussion drills of the type used in all mines where hard stone is to be extracted. Without entering into the details of the progress of the reciprocating engine, I will briefly state that I have devised several methods of producing the desired quality of rising and falling current impulses. The first which may here be cited, and which is applicable to plants operating a very large number of drills, is to have a generator of sufficient capacity to furnish motive power to all the drills or apparatus. Such generator would comprise an armature of large dimensions, capable of giving the necessary electromotive force and current under a slow speed, a speed, in fact, corresponding absolutely to the number of strokes to be made by the drills. Such armature would be provided with a sectional commutator, from which the fields of the machine would be supplied, and, further, furnish current of continuous direction to operate other electrical apparatus

requiring a continuous current. A portion of this current can also be used to energize part of the coils of the reciprocating engine.

In addition to the commutator two continuous contact rings are carried upon the armature shaft, these rings being connected respectively to the main conductor of the armature at diametrically opposite points. From these two rings currents of

one of the brushes upon the sectional commutator and the other terminal of the coil upon one of the continuous rings, giving the alternating current. The polarizing coil is intended to magnetize in a continuous direction a mass of iron consisting of the envelope of the machine and the plunger of the same. To this is added the action of one or more coils, which are energized by currents of rising and falling

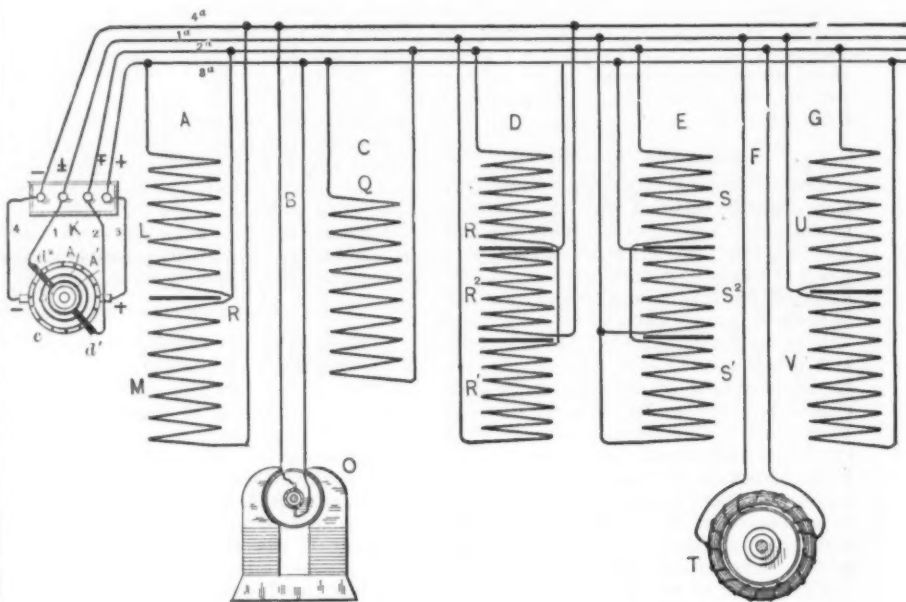


Fig. 1.—Diagram, Showing General Arrangement.

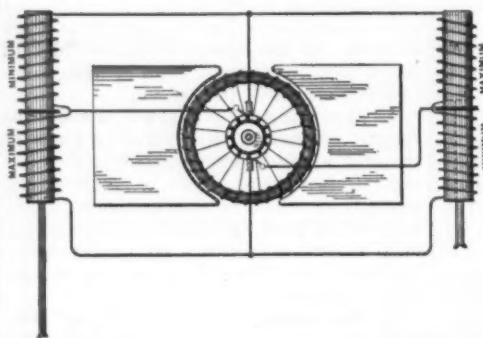


Fig. 2.—Two Reciprocating Engines, Showing Maximum and Minimum Current.

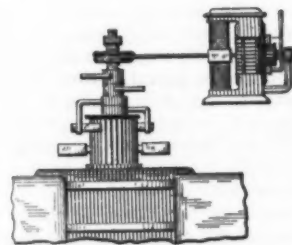


Fig. 3.—Method of Rotating the Brushes.

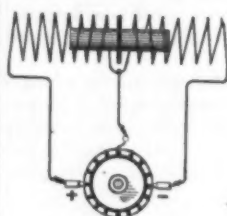


Fig. 4.

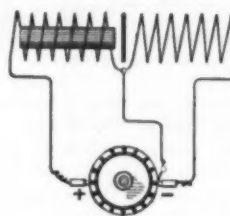


Fig. 5.

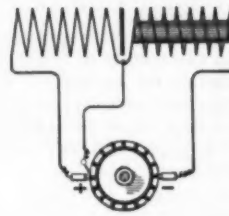


Fig. 6.

Rotating Brush in Different Positions.

### ELECTRIC RECIPROCATING ENGINE.

rising and falling character and of alternating polarity can be collected and led to part of the coils of the reciprocating engine. The coils of the reciprocating engine consist, in some instances, of a polarizing coil or coils energized by a continuous current derived from the sectional commutator of the armature, or the polarizing coil can be excited by a current pulsating in character but continuous in direction, and this is obtained in the present instance by connecting the coil to

character and of alternating polarity, having a defined speed corresponding to that of the speed at which the reciprocating drills are to be driven.

### General Arrangement.

Such an arrangement is illustrated in diagram, Fig. 1, where a sectional commutator is shown, upon which press the brushes plus and minus. These brushes collect currents of continuous direction which, as here shown, are sent to the main



line, while the brushes  $d^1 d^2$  press upon their respective rings A and A', which are connected respectively to opposite sections of the commutator or the winding of the armature. From the brushes  $d^1 d^2$  are collected by suitable conductors currents of alternating polarity, giving a defined rise and fall. As shown in the diagram, these conductors are respectively connected to the middle binding posts of the

while at the center of these two coils, R, is connected a suitable conductor, which is connected to one of the conductors carrying the alternating current. It will be seen that, as the armature revolves, the ring from which the current is collected passes continually from the positive brush to the negative, and *vice versa*, thus sending the current to the section which is not short circuited by the rotating ring, while the

a continuous current motor which is driven by connecting the same to the two continuous current leads of the system. In the same way and from the same leads current can be distributed for lighting purposes, it being continuous in character. C represents a coil one terminal of which is connected to one of the continuous current leads, while the other extremity is connected to one of the pulsat-

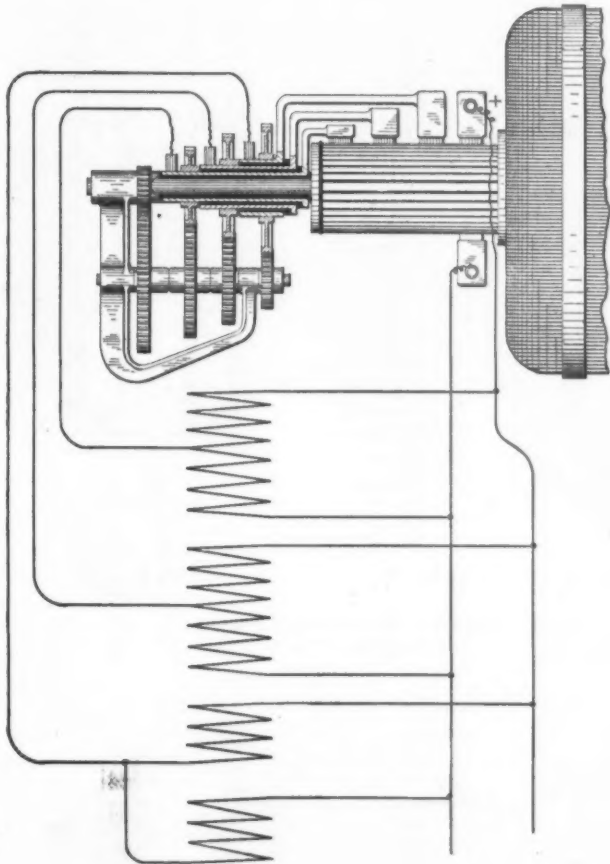


Fig. 7.—Currents of Different Speeds of Rise and Fall.

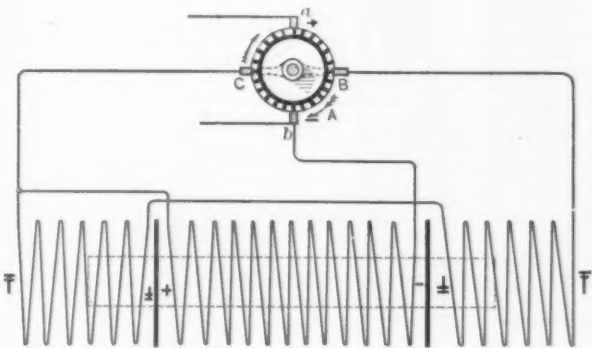


Fig. 8.—Both Alternating and Continuous Currents.

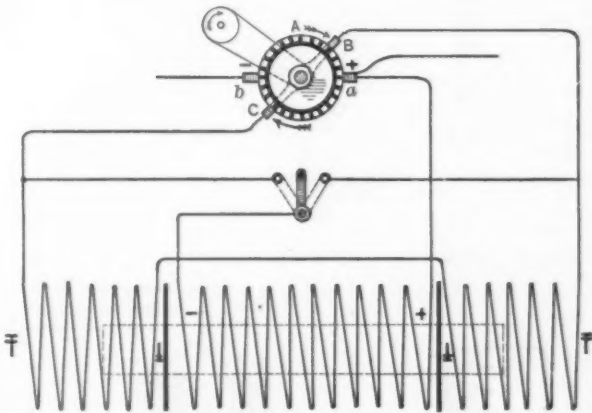


Fig. 9.—Method of Producing Stronger Stroke, Either Forward or Backward.

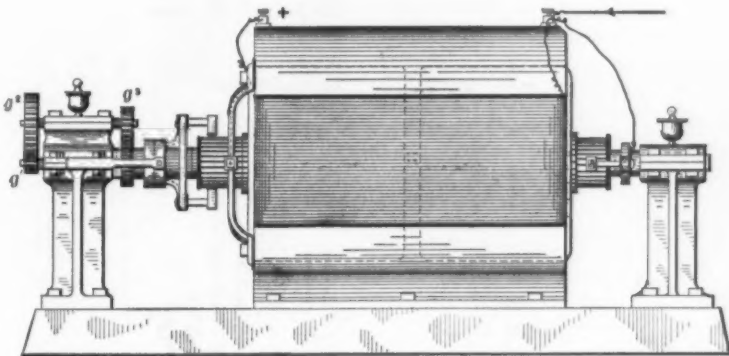


Fig. 10.—Machines for Converting High Potential Currents Into Low Potential.

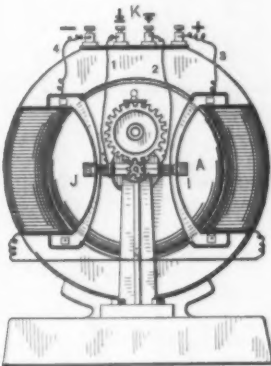


Fig. 11.—End View of Fig. 10, Showing where Transformed Current Leaves.

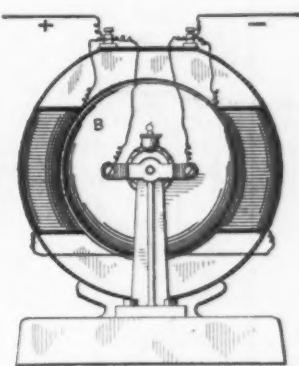


Fig. 12.—End View of Fig. 10, Showing where High Potential Current Enters.

ELECTRIC RECIPROCATING ENGINE.

distributing board and are indicated by the alternating sign. As shown in the diagram, from this arrangement of currents a great many combinations can be made, all of which can be applied to the operation of rotary motors and other machinery, as well as for lighting purposes, as will appear. A represents an electro-magnetic reciprocating engine being energized by a continuous current, the two coils L and M being connected respectively to the positive and negative leads of the system,

other section being connected to the ring presents a short circuit to the coil which is temporarily cut out, so that on the rotation of the commutator and the armature currents continuous in character will be sent alternately from coil L to M, so that the plunger placed under the influence of these two coils will naturally be reciprocated within the same with a speed corresponding to the defined rise and fall of current produced by the generator. B represents

ing or alternating leads. At each revolution of the armature one impulse will be sent through the coil. At D is represented a circuit of the reciprocating engine comprising a central coil, which is energized from the two continuous current leads, while the two extreme coils R R' are energized by currents of alternating polarity and defined rise and fall, this combination necessitating four wires. E is another combination of the same disposition of coils with the exception that

the central coil  $S^2$  is energized by currents having a defined rise and fall, but continuous in direction. The central coil is connected to one of the alternating leads,

minals directly upon the two alternating leads.  $F$  represents an alternating current motor which is energized directly from the two alternating leads.  $G$  is a

#### Machines of Different Speeds.

It often happens, however, that some of the apparatus in a mine is required to run faster or slower than the rest, and for this

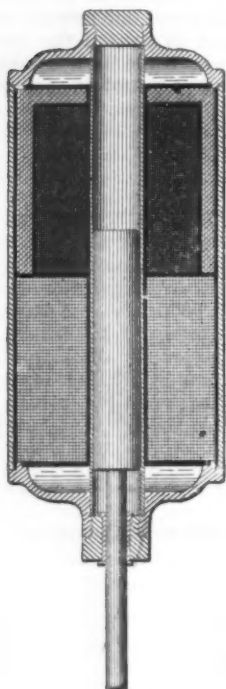


Fig. 13.

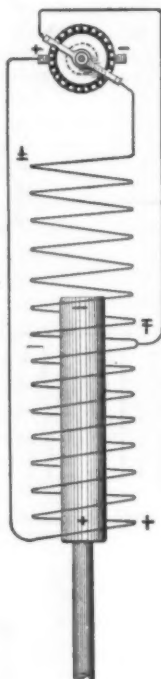


Fig. 14.

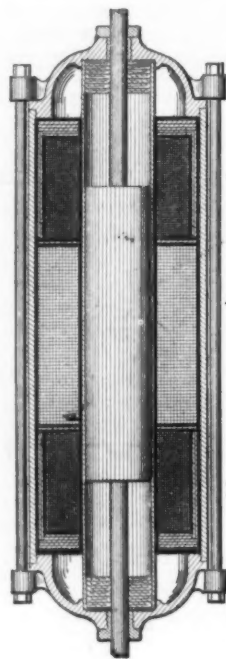


Fig. 15.

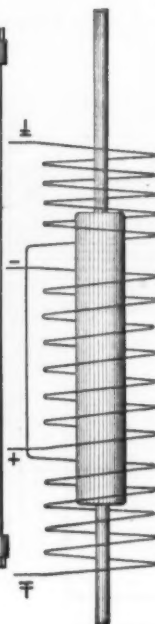


Fig. 16.

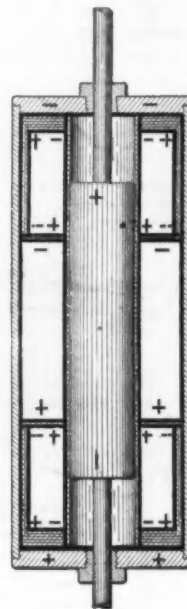


Fig. 17.

Rock Drill.

Electro Magnetic Reciprocating Engine.

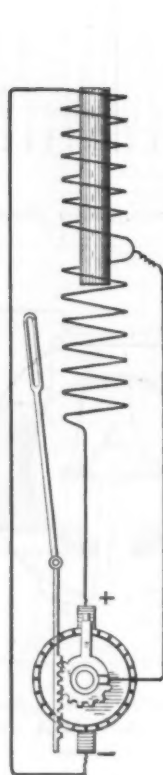


Fig. 18.

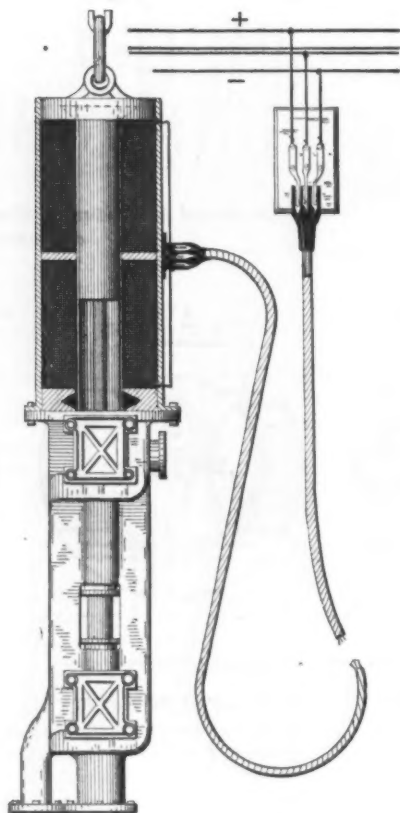


Fig. 19.

Electric Sinking Pump.

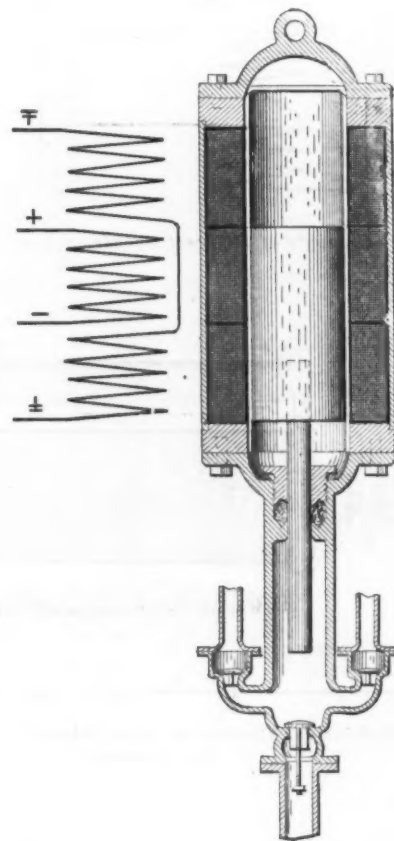


Fig. 20.

Modification of Fig. 19.

#### ELECTRIC RECIPROCATING ENGINE.

while the other terminal of the central coil is connected to a continuous current lead. The two extreme coils  $S$  and  $S^1$  are placed in series with each other and are connected with their respective ter-

minals directly upon the two alternating leads.  $F$  represents an alternating current motor which is energized directly from the two alternating leads.  $G$  is a

purpose I have devised a means which will give any number of current pulsations it is desirable to run the engine with. This simple means consists in the rotating of a brush upon the commutator



of any continuous current machine. This is illustrated in Fig. 2, where there are two reciprocating engines showing the

ent positions of the rotating brush, and illustrate clearly the action of the current between the generator and the coils of the engine. Fig. 7 represents an arrangement by means of which currents of different speeds of defined rise and fall can be collected, so that it becomes possible to run engines of different speeds from one single continuous current machine, the speed of which may be entirely neglected in our present question, since the speed of the current phases depends entirely upon the

three different rates of current impulses. Figs. 8 and 9 represent two diagrams where the two stationary brushes *a* and *b* respectively bear upon the commutator of the continuous current armature, while two rotating brushes, *B* and *C*, respectively, travel around the commutator, passing consecutively in front of the stationary positive and negative brushes, thus sending defined currents of alternating polarity over the lines connected to the rotating brushes, while current continuous in direc-

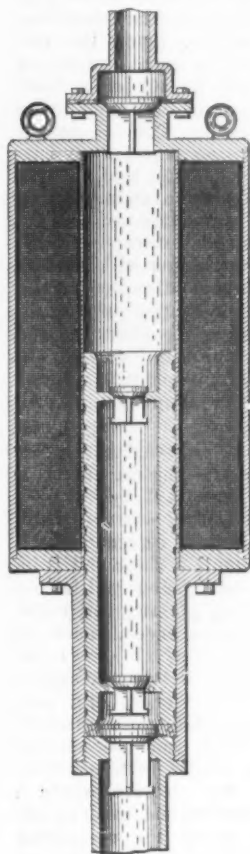


Fig. 21.

*Reciprocating Electric Pump.*

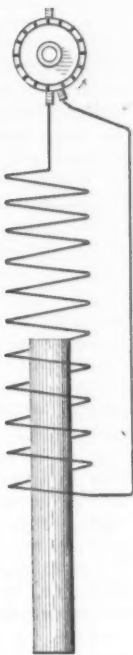


Fig. 22.

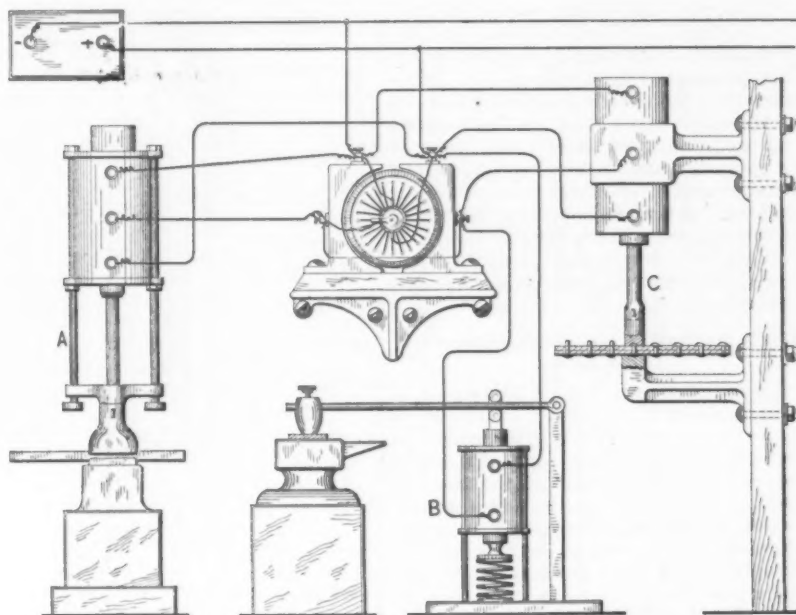


Fig. 23.—Reciprocating Electric Engines in Smith Shop.

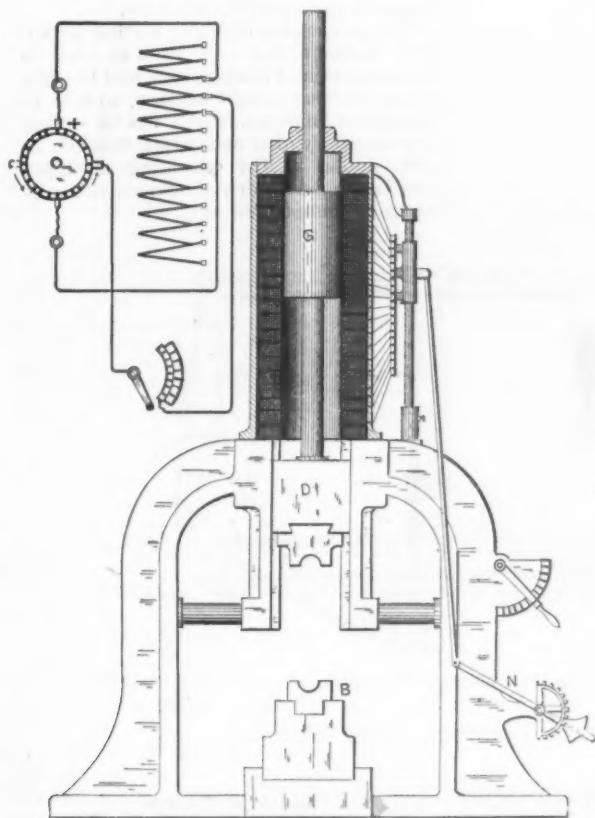


Fig. 24.—Electric Power Hammer.

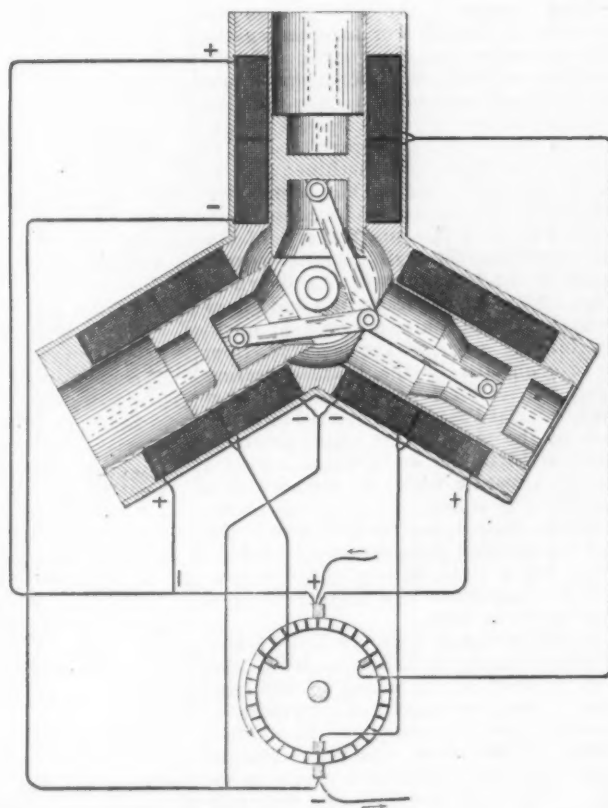


Fig. 25.—Rotating Engine.

#### ELECTRIC RECIPROCATING ENGINE.

maximum and minimum current respectively. Fig. 3 illustrates a means for rotating the brushes upon the commutator, while Figs. 4, 5 and 6 represent the differ-

ent positions of the rotating brush, and illustrate clearly the action of the current between the generator and the coils of the engine. As shown, there are three traveling brushes, each one rotating at a different speed thus operating the engines at

three different rates of current impulses. tion can be collected between the stationary brushes plus and minus, or a pulsating current can be collected between one of the stationary brushes and one of the rotat-

ing brushes. As shown in Fig. 8, the center coil is energized by a pulsating current continuous in direction, while the two end coils are energized by currents of defined rise and fall, but alternating in polarity, so that these coils react upon the polarized plunger, causing the same to reciprocate in accordance with the speed of the rotating brushes. Fig. 9 shows a method of connecting the polarizing coil by means of which the preponderance of the stroke may be given either forward or backward by closing the circuit between the central coil and the conductors. Thus it will be seen that I am enabled to furnish currents of defined rise and fall operating the reciprocating engines, either corresponding to the speed of the prime generator or independent of that speed, by simply causing collecting brushes to rotate over the rotating sectional commutator of the generator, and that currents of defined character can be obtained from the same machine, either continuous, pulsating or alternating, and of such defined speed as is required to operate the respective machinery to be driven, each one at its proper speed.

#### High Potential Currents Converted into Low.

Up to the present I have shown apparatus in which the current is simply transformed from continuous into currents of rising and falling quality, but of the same nominal potential as that of the machine itself, or the supply to the motor generator or converter. There will be many cases, however, where power can be cheaply obtained at a considerable distance from the mines to be operated. In such case it will be advantageous to drive the prime generator by water power or other cheap and available means and then to transmit this current, which can be of high potential, and then convert the same at the point of operation into currents of low potential which can be easily handled without danger to the insulation of the machines or to the workmen having the same in charge. A great many different machines might be constructed that would answer the purpose of converting the high potential current into low potential energy. Fig. 11 shows such an apparatus, Fig. 10 being a side view of the machine: Fig. 11 shows that end of the machine from which transformed currents are to be transmitted, while Fig. 12 represents the end of the machine where the high potential current enters to be transformed. As shown in Figs. 10 and 12, the leads plus and minus from the distant source are brought up to the binding posts of the machine, from there connected to the brushes bearing upon the sectional commutator of what may be termed the high potential or motor part of the machine, by which power is transmitted to the shaft, which carries a second armature which is wound with a suitable size conductor, according to the potential desired, and, as here shown, the two independent armatures revolve within one common field, although this disposition is unimportant and may be changed in a variety of ways.

It will be seen in Figs. 10 and 11 that the shaft bearing the armatures is provided with a small pinion engaging the large gear  $g^2$ , this gear transmitting, by means of a second gear,  $g^3$ , motion to the rotating brushes, from which current is collected and transmitted by suitable means to the main line, as before explained. The continuous current for the system is obtained from the stationary brushes I and J pressing upon the sectional rotating commutator of the low potential armature, so that we have here a means of changing the high potential current to one of suitable potential, giving us an opportunity to take advantage of distant sources of power, making the same available for operating mines where it would be impossible to obtain

either coal or wood or any other means for producing power. I have now shown the principles upon which the system is based for producing and distributing currents having the required rise and fall, and the generation of such currents either directly or indirectly, and have explained the different machines by which I accom-

ity, while the top coil is energized by currents rising and falling and changing polarity. Fig. 13 represents the energizing circuits of the machine, while Fig. 14 illustrates its mechanical construction, the coil, as here shown, being the coil receiving the pulsating current phases of the supply circuit, the phases being, however, constant in direction, although rising and falling in character. The top coil is intended for the rising and falling currents of alternating polarity and, as will be seen, is surrounded by a laminated iron shield, which may be continued on the bottom of the top coil if desired. With this arrangement the plunger will be magnetized in a continuous direction by the action of the coil, but as the polarity in the top coil changes continually, the plunger will be reciprocated to and fro within the two superposed coils at a speed corresponding to the frequency of the current phases.

Figs. 15, 16 and 17 represent an electromagnetic reciprocating engine, having a coil in the center energized by either a continuous or a pulsating current, while two coils are placed one at each end of the central coil respectively. These end coils are the seat of defined rising and falling currents of alternating polarity and cause the plunger to move in accordance with the defined currents. Fig. 17 shows the fixed and variable polarities of the engine under the action of the energizing currents. Fig. 15 shows the construction of such an engine, which can be applied either to pumping or the perforation of rocks, or, in fact, any purpose where a reciprocating motion can be used to advantage. Fig. 16 shows the energizing circuits, the connections of which can be made according to any of the different ways shown in Fig. 1. It will be noticed that in the construction of the reciprocating engines the exterior iron casing of the machine forms in each case part of the magnetic system of the machine.

The percussive drill can further be applied to channeling bars such as used in the extraction of marble, slate and the like where blasting cannot be done, so that in this case a longitudinal slit can be cut of any length, width and depth desired; in fact, similar to the quarrying machines now in use, but which are driven either by steam or compressed air.

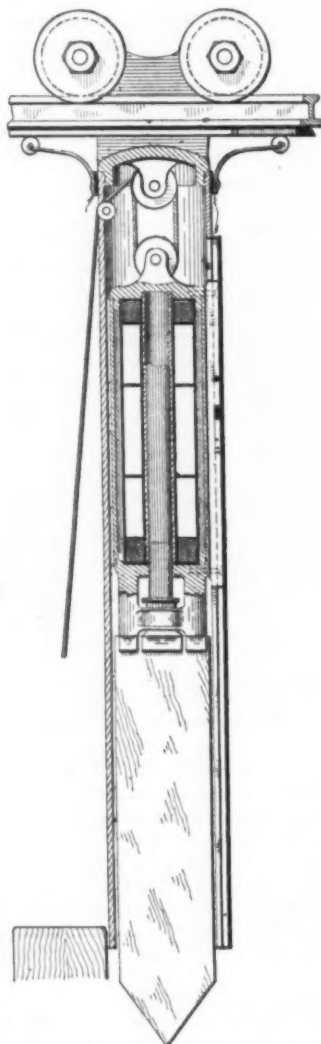


Fig. 27.—Electric Pile Driver.

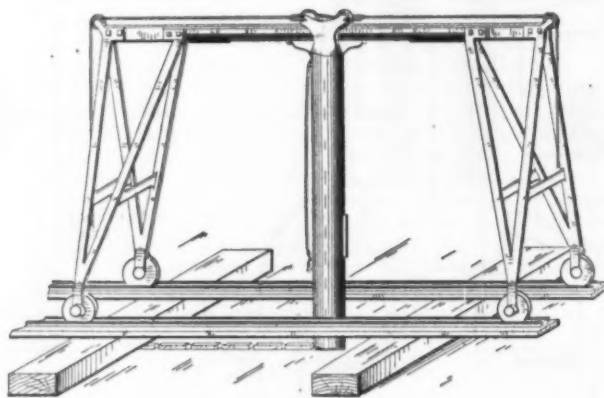


Fig. 26.—Electric Pile Driver.

#### ELECTRIC RECIPROCATING ENGINE.

plish my purpose. Having thus described my system of generating and distributing such currents I shall now proceed to illustrate and explain a few of the reciprocating engines, such as are used in the operation of mines.

First in order comes the

##### Percussion or Rock Drill.

Figs. 13 and 14 illustrate a reciprocating engine having two motor coils, one energized by a current of continuous polar-

##### Electric Pump.

In the operation of mines pumps are kept running almost constantly to keep them clear of water, and up to the present time in most every instance the work has been done by the ordinary steam or compressed air pump. In some cases ordinary pumps have been driven by rotary electric motors, while at the present time very promising experiments are being made with the application of my electro-mag-



netic reciprocating engine to the driving of all kinds of reciprocating pumps.

Figs. 18 and 19 illustrate a sinking pump such as used in mines where the pump is to be lowered down by block and tackle or other and suitable means and intended to work while thus suspended. The cable connection between the power leads and the pump can be made of any length to accommodate the descent of the pump to its proper level, so that here certainly a ready means is obtained for pumping out a mine as effectively as any steam pump would do it, and with much less trouble of erection and attendant repairs. The pump shown is of the double-acting type. The circuits are shown in Fig. 18, as well as a simple method of reciprocating the movable brush upon the commutator of the generator.

Fig. 20 shows a modification of such a pump, being single acting and intended to raise the water to great heights. The different figures show the circuits from the generator to the pump, as well as the mechanical construction of the same, and need no further description.

Fig. 21 is still another modification of an electric reciprocating pump, being of the single acting type and direct acting, inasmuch as the magnetic plunger plays the part of the pump piston, being provided with valves and working in a diamagnetic tube, water packed or otherwise made tight within the cylinder or tube, thus producing a pump which will find many applications where water is not to be raised to great heights. Fig. 21 shows the construction of the pump; Fig. 22 shows the energizing circuits of the same.

#### Reciprocating Electric Engines in Smith Shop.

Fig. 23 represents the application of the reciprocating system as applied in a smith shop, where the reciprocating action is applied to run hammers either for forging, riveting or other purposes.

#### Electric Power Hammer.

Fig. 24 represents the system as applied to heavy forging. It represents a power hammer of the ordinary construction, having, however, electric instead of steam power to actuate it. It will be noticed that the power cylinder is composed of a large number of superposed solenoids of short length and large diameter surrounding an iron plunger, G, which is connected to the block or hammer D below the rod. The sectional coils are connected to a corresponding number of stationary and well-insulated segments, and upon these segments bear three brushes or contact plates, so that by placing the three contact plates and keeping them stationary upon any part of the sectional commutator the current pulsations will take place between the respective contact blocks and will reciprocate the plunger within the field created by the energized coils, so that by simply moving the handle N the contact blocks will be displaced upon the sectional commutator, thus displacing the magnetic field of the coils, and by so doing the same will be made to ply within a certain region, and can also be made to strike a light or heavy blow, according to the distance between the hammer and the work. The handle N further regulates the power of the blow by placing more or less resistance in the return circuit, as illustrated in the diagram. With this disposition it becomes at once practical to construct the largest hammers used in heavy forging. No valve mechanism or other delicate parts being present in such a machine, the same will lend itself readily to all purposes where steam or compressed air is being employed at present.

#### Rotating Engine.

Not only can reciprocating motion be produced by the system of rising and fall-

ing currents, but the same can be converted very readily into rotating motion, such a machine being represented in Fig. 25, where a tri-cylinder reciprocating engine is shown, the circuits of which are illustrated in diagram between the generator and the circuits of the engine.

#### Electric Pile Driver.

In fact, space is too short to enumerate all the applications to which the reciprocating system lends itself, and last, but not least, I show in Figs. 26 and 27 the application of the reciprocating engine to the driving of piles, the illustrations showing such an engine as applied to sheet piling, as used in the digging of sewers or other trenches where quicksand or other loose material has to be dealt with. Fig. 26 shows the apparatus as in operation, being carried by a transferable carriage, which can be moved along on suitable rails as the work progresses. Fig. 27 shows the support of the reciprocating engine guided within an iron tube, the same being slitted on the side for the introduction of the board or plank to be driven in the ground. As here shown, the full weight of the reciprocating engine is at once placed upon the board, the rope raising the engine being entirely free when the engine is to be started to work. It will be noticed that the board is placed between the downwardly projecting lips on the lower end of the engine, and that between these lips is placed a driver also embracing the top of the board. The engine itself is driven by means of any of the methods already explained, reciprocating a heavy iron plunger, which strikes forcibly upon the driver, at the same time partly lifting up the whole body of the engine, so that on the up stroke of the plunger the weight of the whole engine comes down upon the board and continues to drive the same downward, when the next blow will repeat the same action, thus affording an apparatus which causes a double action, one blow being struck directly by the plunger and the other by the falling of the machine itself upon the pile.

The foregoing clearly shows the application of the electric engine to the different branches of transmission of power. It will be seen that there is no end to the application of the same to the performance of all kinds of work that is now being done with more or less success by other means of transmission.

The only question now left regarding the application of electricity or other power to the different branches of mining and other industries is the difference in expense of the first cost of the plant and the cost of operating the same, so that it becomes the duty of the engineer charged with the installation of such or other plant to see which of the many systems available to him will be the most economical in practical use. There is no question, however, but that electricity goes ahead of any and all systems of transmission, inasmuch as it is the only agent which will allow of great division of power from a central place with the greatest amount of efficiency as compared to any of the other known agents in use up to the present date.

We understand that the majority of the bold innovations in Bessemer and rail rolling practice introduced at the new works of the Maryland Steel Company, at Sparrows Point, Md., have by their success justified its designers. The Bessemer plant has worked smoothly, and the method of doing away with the pit, and casting the ingots on cars by drawing them along under the ladle has been tested under the most adverse conditions which usually arise in starting a new plant. The method

has worked when accidentally the flow of steel from the ladle was extraordinarily rapid. It has been manageable even when it was found necessary to pour the steel over the ladle instead of tapping it. In fact, we are informed that the new system has already found a conspicuous imitator. The soaking pits have not as yet proved a success, and a plant of gas-fired pits is being built. Experience has taught that the readjustment of temperature between the core and the shell of an ingot possesses the right heat for most successful rolling only during a brief period. If the ingot be withdrawn from the soaking pit either too early or too late there is a tendency toward producing an undue percentage of seconds. At works where the rolling train can afford to wait until the ingots can be withdrawn from the soaking pit at exactly the right time the method is successful, but where continuous work is demanded in rolling, heating furnaces are safer. We understand that the Maryland Steel Company have by no means the intention of abandoning the soaking pit system, but it is not deemed expedient at the present time to continue tentative work, when the labor of drilling large crews made up almost entirely of inexperienced men at the outstart must necessarily be the first consideration. We are advised that the rolling mill proper has proved a complete success, and that the direct rolling of six lengths of rails on a three-high train has been demonstrated to be entirely practicable and satisfactory. The cooling beds, the feature of which is that the hot rails are not allowed to touch each other, are also giving excellent results.

#### Trade with Jamaica.

It is announced at Washington that satisfactory arrangements have been agreed upon with commissioners from the British West Indies for reciprocal trade with Jamaica, Barbadoes, the Windward and Leeward Islands, Trinidad and British Guiana. In return for the continued free introduction of sugar and coffee into the United States it has been agreed by the colonies named not only greatly to enlarge the free list of their tariffs, but also to make very considerable reductions in the duty on the leading agricultural and other products of the United States. The total value of the imports for the year amounted to \$10,478,449. The total imports from the United Kingdom amounted to \$5,847,029; from the United States to \$3,554,125; from Canada to \$791,047; from Colombia to \$91,568. The export of island products for the year showed an increase of 20 per cent. over 1889. Exports to the United Kingdom increased 16 per cent. and now amount to 33 per cent. of the total; exports to the United States show an increase of 23 per cent. and now equal 54 per cent. of the total exports; the exports to Canada increased 12 per cent. and now amount to 2 per cent. of the total exports.

The following table shows the values of the leading articles of export to the United Kingdom and the United States respectively:

	Exports to United Kingdom.	Exports to United States.
Coffee .....	\$551,404	\$620,017
Bananas .....	106	2,160,870
Cocoanuts .....	12,271	122,867
Oranges .....	5,634	256,625
Pimento .....	853,237	130,389
Rum .....	853,237	26,611
Sugar .....	65,267	958,471
Logwood .....	902,518	374,547

The total value of the exports to some of the leading countries was as follows: United States, \$4,751,444; United Kingdom, \$2,975,843; France, \$282,031; Germany, \$253,935; Canada, \$201,690; Russia, \$91,157; Italy, \$42,848.

### The Thomas Oscillating Steam Engine.

The principle involved in the Thomas engine is that of having the steam cylinder provided with two steam passages leading one to each side of the piston. The piston rod is connected with a crank on the shaft to be driven, as shown in Figs. 1 and 2.

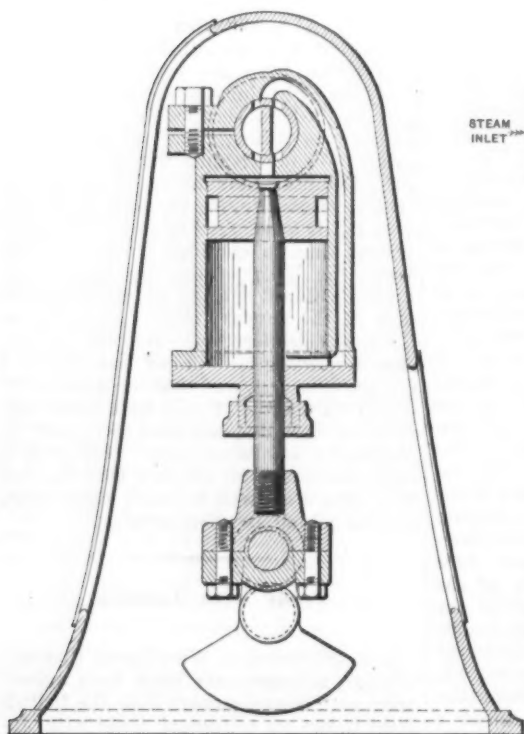


Fig. 1.—Vertical Section at Right Angles to Shaft.

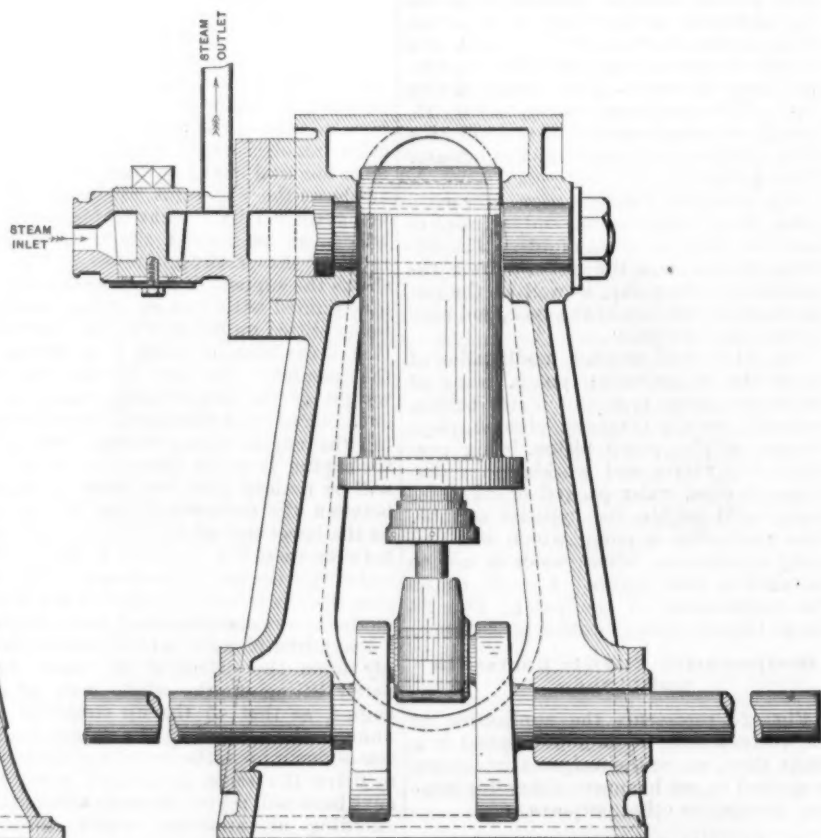


Fig. 2.—Vertical Section Parallel with Shaft.

The cylinder is suspended, so as to oscillate, on a stationary hollow pin forming the steam chest, and which is divided longitudinally by a diaphragm into two chambers. By the oscillations of the cylinder these two chambers are caused to coincide simultaneously in pairs with the two steam passages, whereby the steam enters each cylinder alternately against and exhausts alternately from opposite sides of the piston from ports caused to open into the cylinder by its oscillating movements.

Journalled in bearings near the base of the supporting frame is the crankshaft. Held in the upper portion of the frame, parallel with the crankshaft, is a rigid hollow pin divided longitudinally by a diaphragm into chambers, as shown in the plan view, Fig. 3. The steam enters the chamber indicated, and after having done its work in the cylinder is exhausted through the other chamber. The steam cylinder has a thick upper head, in which is a cylindrical transverse opening, in which the hollow pin fits snugly. At the extreme right in Fig. 3 will be noticed two concentric circles, designed to represent a four-way throttle. When this is turned to the position indicated in the figure, steam enters the upper chamber or steam chest, Fig. 3, and acts against the upper side of the piston, the exhaust steam passing out through the lower chamber. It is evident that the oscillation of the cylinder will open the other ports, and cause the steam to travel in the contrary direction. To reverse the direction of rotation of the crankshaft it is only necessary to so turn the throttle as to lead steam first into the

lower chamber, Fig. 3. It will be observed that by properly arranging the steam chambers and suitably increasing the length of the hollow pin, additional cylinders can be hung upon it, and the advantages of compound and triple-expansion engines derived. This new engine is very simple in construction, can be run at high speed and its only reciprocating part accurately balanced. Both the single and

Chicago from water color drawings by C. Graham. They comprise the Manufactures and Liberal Arts Building, the Government Building, the Casino and Pier, the Machinery Hall, the Electrical Building, the Fisheries Building, the Horticultural Building, the Woman's Building, the Transportation Building, the Administration Building, the Art Palace, the Naval Exhibit, the Hall of Mines and Mining,

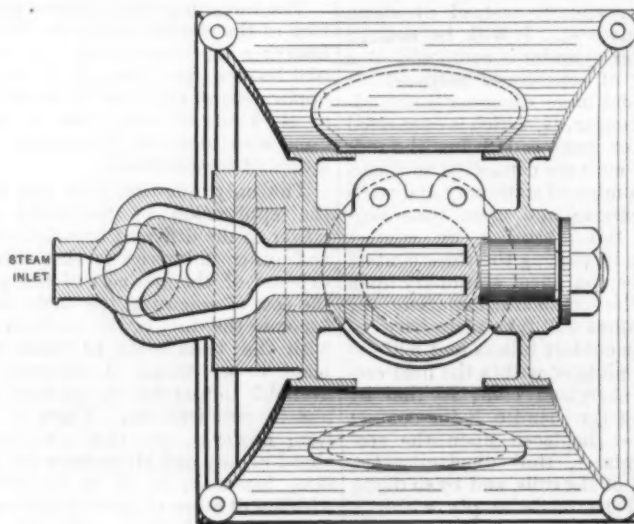


Fig. 3.—Sectional Plan.

### THE THOMAS OSCILLATING STEAM ENGINE.

compound types of this engine are covered by patents granted to William Thomas of Ovington, Ill.

We have received, with the compliments of W. H. Sills, dealer in mica, 86 Lake street, Chicago, a copy of a very artistic portfolio of the World's Columbian Exposition. The illustrations are made by the Winter's Art Lithographing Company of

the Agricultural Building and a two-page bird's-eye view of the grounds, all in colors, together with appropriate descriptive matter. The pamphlet is a beautiful souvenir which will be highly appreciated by the recipients.

The ocean mail contracts with the Pacific Mail Steamship Company and the line to Venezuela have been executed.



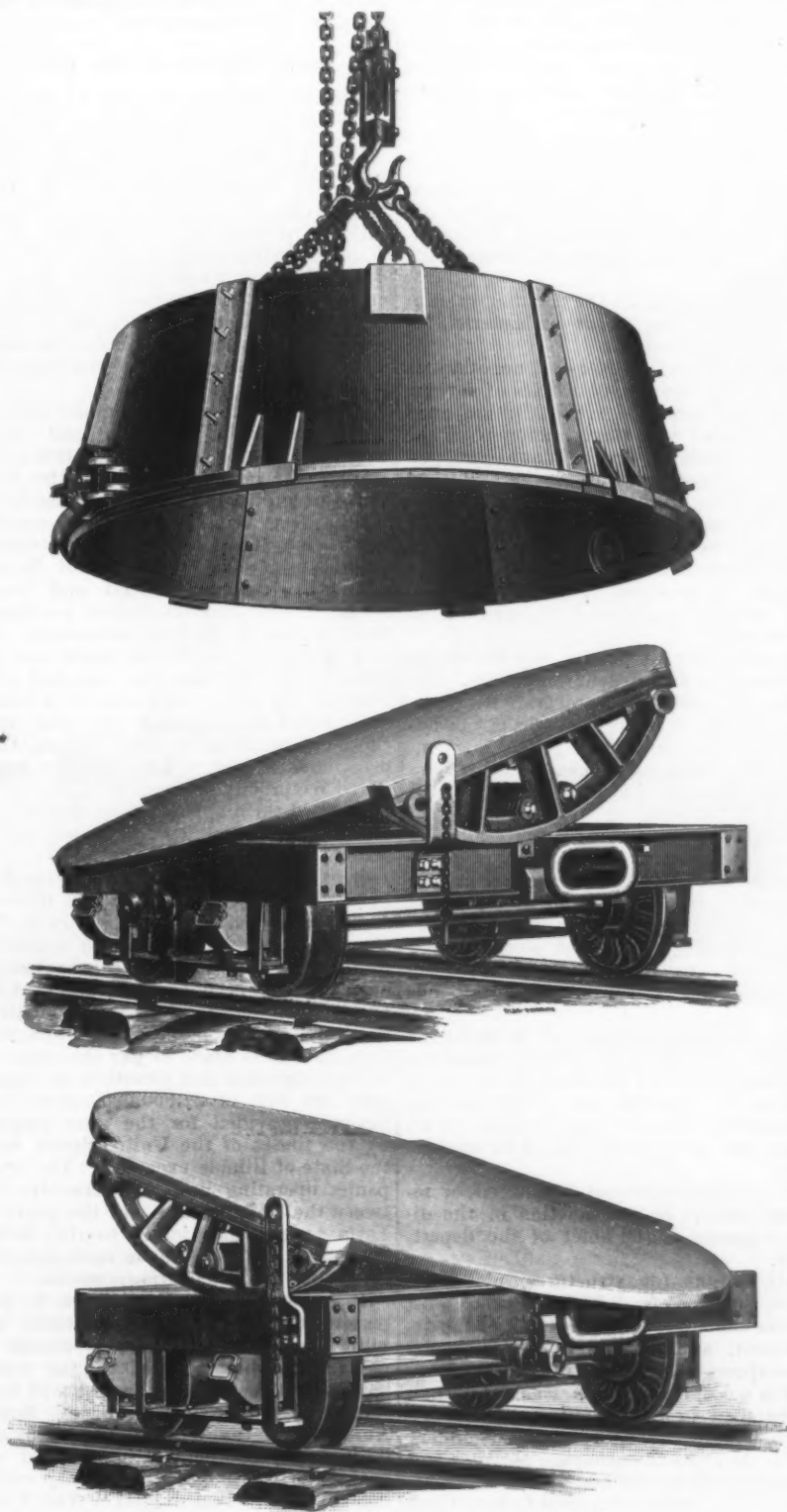
**Blast Furnace Cinder Car.**

The accompanying engravings represent a cinder car for handling fluid or solid cinder, built by the Philadelphia Engineering Works, Limited, of Philadelphia. The car has 120 cubic feet capacity and holds about 6 tons of cinder. It is carried upon four wheels, with axles of stand-

l irons, in case it should crack. The sides of the tub are composed of six castings, bolted together, and have a good accommodation in expanding and contracting; these plates are, therefore, durable.

The bottom is sometimes cast with a rim nearly the diameter of the bottom of the tub, within which are laid bricks to protect the bottom from being cut when iron

cinder, the cinder dump may be increased endwise of the track or sidewise—that is, lengthened or widened—and preparations made for extending or moving the track sidewise. When used for fluid cinder only one fixed crane for elevating the tub is required, which may be a chain block hitched to a beam. The tub being raised from the bottom, entire cleaning is practically effected.



BLAST FURNACE CINDER CAR.

ard railroad pattern, with oil box journals and standards, the whole weight being carried on springs. The frame consists of three 9-inch beams each way. Upon these roll three rockers, which are held level, except when dumping, by a pin, as shown; upon these rockers the bottom plate of the car is bolted, and upon it sits the tub, which has a decided taper, being smallest at the top. The bottom plate is a heavy casting in two sections, held together by the three rockers and three heavy

runs over from the cinder notch. The cinder will slip from the brick bottom or from the iron bottom with ease when the car is tipped after the tub has been raised. Cast-iron sides are much more durable than brick-lined vessels, as any kind of brick is easily fluxed with hot basic cinder. The especial peculiarity of this car is that it can be used as above stated for cinder worked fluid or solid, and it can be tipped either endwise or sidewise, according as it is set. Used for fluid or solid

**The New Wire Mill at De Kalb, Ill.**

Several months ago, says the *Farm Implement News* for December 3, and during the negotiations that resulted in a closer combination of the barb wire manufacturers, into which the Superior Barb Wire Company of De Kalb, Ill., did not enter, the stockholders of said company came to the conclusion that they must manufacture their own wire in order to maintain their position on the market in the face of existing close competition and to insure against possible developments in the industry. They quietly considered the matter in all its bearings, keeping their own counsel, because they did not care to make public their plans until finally consummated. Such an enterprise would require the expenditure of a large amount of money. This the promoters of the enterprise could readily provide, but there were other questions to consider and some peculiar difficulties to surmount before the works at De Kalb could be commenced, and these have occupied their attention during the fore part of summer and the early fall. The citizens of De Kalb knew something of the kind was contemplated, but not until a couple of weeks ago were they fully advised of the magnitude and character of the works that were about to be erected in their city. This was quite in contrast with the current mode of establishing such enterprises, which are usually heralded long in advance, magnified, bonuses demanded, &c.; but I. L. Ellwood, Hiram Ellwood and Joseph Glidden, the chief promoters, are men who run their own business and they do not require any help, hence the quietness of the preliminary proceedings.

Last week ground was broken and active operations begun on the new wire mill, located in the east end of the city. The buildings that will be immediately erected, or as quickly as the weather will permit, are as follows: The main center building for wire drawing and barb machines is 312 x 60 feet, two stories, brick, with stone trimmings, as are all the others; a galvanizing house 200 x 60; a warehouse 200 x 60, and connected with the latter a dip house 60 x 60; and connected with the main building will be a cleaning house 60 x 60, spool and machine shop 125 x 40 and boiler house and coal shed 125 x 40. An artesian well of 8-inch pipe will supply the water. The works will start up with a capacity of 40 tons per day from rods to spooled barb wire and with 200 men. C. H. Morgan of the Morgan Construction Company, Worcester, Mass., who was a manager for the Washburn & Moen Mfg. Company for 23 years, is in personal charge of the construction of these works, which will be first class and fitted with the most modern machinery and appliances.

As will be observed, the plant is one of considerable magnitude, and as it will draw the wire as well as make it into fencing—rendering the proprietors quite independent of possible corners or lack of wire—it may have quite a steadying influence upon the industry, especially in the West. It is anticipated that other wire works will be connected therewith in due time, and it is certain that this plant will be enlarged if the requirements of the trade demand and business prudence shall justify.

## WORLD'S FAIR NOTES.

Chicago was somewhat excited last week by a sudden proposition from the exposition authorities that all the United States Senators and Congressmen should be invited to visit the city and see for themselves both the scope of the project and the progress thus far made in the erection of the buildings. The idea was received by the citizens with enthusiasm, and a committee was at once sent to Washington to arrange for the visit, to cover the period from Saturday to Tuesday. It was found, however, that the time was too short, as many Congressmen had engagements on hand which they could not postpone or set aside, and a full attendance could not be had. Arrangements were therefore made for such a visit on February 22. This date will fall on Monday in 1892, and will be appropriate and convenient in every respect. Time will be given for a better preparation by the citizens of Chicago for the entertainment of their distinguished visitors, and it is highly probable that the event will be one that will live long in the memory of the participants.

### Construction Work.

The week has been a busy one at the park, and 4200 men have crowded forward the 14 buildings now in process of construction. In them have been placed up to date 27,000,000 feet of lumber and 2000 tons of iron. The Woman's Building is the furthest advanced, and stands up like a marble palace. It is roofed, and there remain but a few days' work for the exterior decorators. Meanwhile lathing and plastering have begun. The Mines Building frame is done and workmen are finishing the roof. The glaziers are at work and 20 per cent. of the skylights is in. The basement and floor of the Art Building are finished, and the walls are rising at the rate of 125,000 bricks a day. The Agricultural Building has grown fast in a week, and the joists for the gallery floor are being laid. More work has been done on the Transportation Building in the last two weeks than in the preceding four months, when work began. All of the heavy frame work of the structure has been finished in two weeks, except the placing of the trusses for the central portion of the roof. The Fisheries Building is up to the cornice line. The roof trusses are being placed on the east pavilion or aquaria, and the west pavilion is finished to the floor line. The four pavilions of the Administration Building are up to the roof line, and all are being rapidly covered with staff. The roof trusses are being placed. The iron work is finished up to the line of the colonnade floor.

The Horticultural Building is ready for the exterior covering and is up to the main cornice line. The north and south pavilions are ready for the roof trusses. The west, or rear curtain (that section of the structure connecting the dome with the pavilion) is roofed and is ready for the skylights. All the trusses for the front curtain are framed. The floor of the Manufactures Building is three-fourths done, and in this floor and its foundations 6,000,000 feet of lumber has been placed. There is more material in the floor of this building than in the complete structure of any other on the ground except Machinery Hall. The Electricity Building has in a few days risen from the ground to the second-story line. The first of the 29 steel trusses which will support the roof was raised Wednesday, and 12 more are framed on the ground ready to raise. These trusses weigh 32,000 pounds and are 115 feet wide. There are 464 tons of steel in the roof of this building. Machinery Hall, after a long rest, has boomed in the last

ten days, and a great deal of work has been done. The floor of the main building will be finished this week. The foundations of this building are double the strength of any other, having double girders and double posts in the foundation piers. The first post in the frame work of the Dairy Building was set Friday. The Forestry Building is being rapidly inclosed for the use of the model makers. The building is two-thirds complete, and it is being finished entire as it proceeds. The outside rustic work will not be put on until spring, and a temporary roof of shingles will be nailed on at once. The permanent roof will be a thatched one.

### Rules for Manufacturers.

Chief Allison has just issued a set of rules for the guidance of intending exhibitors in the Department of Manufactures. The regulations are substantially as follows:

Exhibitors must be the manufacturers or producers of the goods or materials intended for exhibition.

Applications for space and negotiations relative thereto for all articles of foreign production intended for exhibition must be conducted with the commission of the country where the article is produced.

All applications must be accompanied by a diagram to the scale of  $\frac{1}{4}$  inch to the foot of the plan and distribution of the articles to be exhibited.

If exhibits are intended for competition it must be so stated by the exhibitor, or they will be excluded from examination for award.

Articles that are in any way dangerous or offensive; also patent medicines, nostrums, and empirical preparations whose ingredients are concealed, will not be admitted to the exposition.

No fire, inflammable oils, nor other combustible material will be permitted in the building.

Be prompt in making applications for space. The sooner the mass of applications is in our hands, the sooner can we determine the assignments to be made. Fill out the application in exact accordance with the regulations accompanying the blank furnished. This will save delay, annoyance and needless correspondence.

To preserve harmony and to make the exhibits attractive the chief reserves the authority to direct the arrangement of all articles on exhibition and to regulate the dimensions, character and location of all signs and advertisements, or to exclude them.

The flooring must not be altered or removed, except by the sanction of the director general or the chief of the department.

All designs for structures, platforms, cases, partitions, and height of same must receive the approval of the chief of the department, and must conform to general rules approved by the director general.

It is not intended that machinery shall be installed in the Manufactures Department, but shall take its place in Machinery Hall. In order to encourage pleasing and attractive effects and add life to the various exhibits, where required to keep them moving, a limited amount of noiseless motor power may be applied, subject to the approval of the chief of the department.

The following limits may not be exceeded: Platforms, 7 inches above the floor; railings, 2 feet 6 inches above platforms, and they must be included within the space assigned to the exhibitor; counters, 2 feet 10 inches above the floor on the side next passageway.

The material to be used for covering counters, screens or partitions will be subject to the approval of the chief of the department.

Unless otherwise ordered, all signs must be of a uniform design, with gold letters on black or maroon ground. They may not be made of muslin, linen, canvas or paper. They must be placed parallel with the frontage or passageways of the respective stands or exhibits, and must in no case interfere with the light or view.

Exhibitors will not be permitted to put up flags, banners, or other decorations or advertisements without permission from the chief of the department.

### South America at the Fair.

President Harrison has sent to the Senate a letter from the Secretary of State inclosing a copy of the first annual report of William E. Curtis, the Director of the Bureau of American Republics. Mr. Curtis says that the immense number of applications received for information about South American countries give ample evidence of an awakened interest in the commerce and the conditions of the neighboring countries that is encouraging to those who are endeavoring to promote the social and commercial relations of the American republics.

The report refers to the rapidly increasing export trade to Central and South American republics, and says that many United States manufacturers who have never attempted to sell merchandise in the Southern Continent are now sending agents into those markets to introduce their goods. The merchants of Mexico and the cities of Central and South America, who have heretofore purchased their goods in Europe exclusively, are now coming to the United States, and invariably discover that they can find here nearly every article they need of a better quality and at no greater cost than they can be obtained for in Great Britain, Germany and France. The recently negotiated reciprocity arrangements, it is said, also afford them opportunities that are beginning to be understood and appreciated.

Mr. Curtis refers to the work undertaken by the bureau of interesting the Government and people of Latin-America in the World's Fair. The invitation extended to them to participate in the exposition has, he says, been cordially accepted by every republic and colony. Commissioners have been appointed and appropriations have been made to pay the expenses of representation that exceed in the aggregate the sum of \$2,000,000—more than has been provided for the same purpose by the States of the United States, with the State of Illinois excepted. The companies operating lines of steamships between the United States and the ports of Latin America have joined heartily in the enterprise and have made most generous concession in rates of transportation.

It is proposed, Mr. Curtis says, to prepare for the exposition a commercial exhibit illustrating the various classes of merchandise best adapted to the wants and most acceptable to the tastes of consumers in Mexico, Central and South America and the West Indies. This exhibit, it is proposed, at the close of the exposition shall be permanently established either in Washington or New York.

### A Great Electrical Display.

Mention has heretofore been made of the application for space by the firm of Siemens & Halske, the eminent electrical apparatus manufacturers of Berlin, Germany. Some details have since been given relative to their proposed exhibit, which are of much interest.

Space is asked for a 1500 horse-power electric generator and a 500 horse-power generator in the power-house. This, the committee decided, should be allotted. Inasmuch, it is said, as no previous generator beyond a 500 horse-power one has



been manufactured, the proposition of the German firm is regarded as something far beyond unusual. Mr. Edison has asked for space for a 750 horse-power generator, but so far as can be learned he has not considered the production of a generator of twice this capacity.

The second request was for space for an exhibit of electric railway appliances, including a track for exhibition purposes, which the company offered to build at their own expense. As no provision has been made for such a trial track, the committee could only reply by saying that it would favor the project and endeavor to have it carried out. Next, it was desired by the Berlin firm to put in a mining tunnel at its own expense under the Mines and Mining Building. It desired to show a system of electric tram cars in operation. In answer to this request the company were informed that they would be given a statement of the character of the foundation material under the Mines Building, and if, after being acquainted with this, they had any proposi-

tion to submit, the same would be considered. Then the company asked for the privilege of running electric boats on the lagoons in Jackson Park. In answer to this the committee replied that the lagoons would be reserved for the passenger boats of the exposition, but the management was willing to allow exhibit boats, such as were proposed, to ply about the harbor for pleasure craft and out in the lake. The fifth and last request was for space for an electric motor of 1000 horse-power. The company desired to show it in operation. A definite answer could not be given. The best that could be said was that when it came to awarding contracts for light and power the company making the request would be given a chance to install their motor. This 1000 horse-power motor is said to surpass anything of the kind in general commercial use.

#### The Question of Sunday Opening.

The Sunday question seems destined to plague the management. Religious associations without number have adopted memorials protesting against opening the exposition gates on Sunday, while on the

train and given the opportunity of inspecting all the work thus far done. They were greatly pleased with what they saw had been accomplished.

Manning, Maxwell & Moore of New York have asked for the privilege of equipping a machine shop on the grounds. The firm propose to furnish machinery and tools to the value of \$125,000. These tools or duplicates of them will be placed in Machinery Hall. Plans have already been drawn for the machine shop.

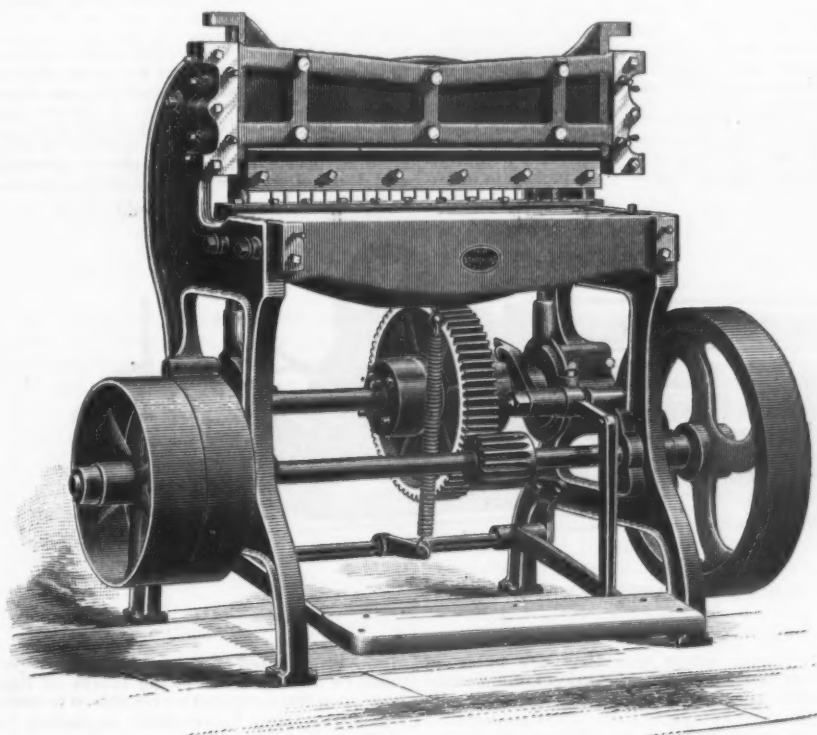
#### Gang Punching Machine.

The gang punching machine here illustrated, which has just been brought out by the Niagara Stamping and Tool Company of Buffalo, N. Y., is designed for punching a row of holes through sheet metal at one operation. The standard size is 30 inches long with a 2-inch throat. This permits sheets of unlimited length being punched all along the edge.

The back-gear power machine illustrated punches 24 holes  $\frac{1}{8}$  inch in diameter through No. 16 gauge iron. The back gauge is adjustable and a side gauge gives the exact distance from the last hole punched for next operation. The punch and die plates can easily and quickly be removed, and others substituted with punches of different size and location. Single punches can be replaced in case of breakage. The machine is provided with an improved combined pin and friction clutch, whereby the punch will make but one stroke at the depression of the treadle and then stop until the treadle is again depressed. Special attention has been given to the stiffness of the machine, combined with simplicity of construction. Lever machines are suitable for punching a limited number of holes through No. 16 iron.

#### Smoke Abatement in Cities.

The following is an abstract of a paper presented by George R. Ide at the last meeting of the Engineers' Club of Philadelphia: The principal objections to smoke are that it gives everything in the neighborhood a disagreeably smutty appearance, that it renders the atmosphere unpleasant to breathe, and that it produces injurious effects on vegetation. The loss of fuel is probably not greater than one per cent. There are three systems of supplying fuel by hand—the spreading system, the coking system and the alternate side-firing system. A great amount of care is required with any system of hand firing, to prevent the formation of smoke; much more than can usually be exercised. The coking system is as old as 1800, when a patent was granted in England for such a system. In the United States since that time there have been probably 1000 patents granted for contrivances of this nature. In all or most of these contrivances the principle is old, but embodied in various forms, and many of them are successful in preventing the formation of smoke in objectionable quantities. The principal reason why a more general use is not made of these devices is their first cost and the fact that some one else is inconvenienced. Few cities have any regulations on the subject, and those that have do not enforce them, for fear of driving away manufactures. The report of the Smoke Abatement Committee in 1882 shows that by the use of improved designs of furnaces and methods of operating them the smoke nuisance may be practically done away with, and that the use of mechanical stokers is of the greatest importance in producing this result. The abatement of the smoke nuisance, so far as steam boilers are concerned, does not depend upon the possibility of designing suitable new appliances, but upon that of inducing proprietors to use the appliances long since designed.



GANG PUNCHING MACHINE.

other hand labor organizations have taken a determined stand in favor of opening on Sunday for their special benefit. No decision has yet been made on this subject by those who alone can speak authoritatively. The advocates of Sunday closing point to the Centennial of Philadelphia as an example which should be followed by Chicago, but they evidently do not know that after the Centennial was once in full blast the management yielded to pressure and issued passes for Sunday admission. Toward the close of the exposition the Sunday attendance was very large, but its treasury received no revenue from this source, as the admission was free—not to the masses, of course, but to those able to bring influence to bear in the proper direction. This argument is being urged by those in favor of Sunday opening, who allege that they do not wish to see any discrimination.

Commissioner Wermuth's Work. Imperial Commissioner Wermuth is doing good work in Germany for the World's Fair. Frank Mason, United States Consul-General at Frankfort, has sent a letter to headquarters, in which he accords great praise to Herr Wermuth for

On the 15th inst. 150 members of the Western Railroad Club visited the exposition grounds by special invitation. The club is composed largely of officers of the mechanical departments of railroads. They were taken to the grounds in a special

#### Brevities.

### The Wickes Plate-Bending Rolls.

An illustration is herewith given of the Wickes Patent Plate-Bending Rolls, recently put on the market by the manufacturers, Wickes Brothers of East Saginaw, Mich.

These plate-bending rolls are made from 10 to 20 feet in length and of various diameters to suit the requirements for all the different thicknesses of plate. The rolls are driven by double horizontal engines controlled by one lever. The stopping, starting, reversing and the speed at which the engines are run are all under control of the one lever, which not only gives the operator the most perfect control of the machine, but also enables him at the same time to oversee the operation of bending the plate.

All parts are mounted on a heavy iron frame running the entire length of the machine; the top roll is raised and lowered by power, either end being raised or lowered independently when desired. This mechanism is driven by a friction attachment controlled by a lever under the foot of the operator, and is so designed and constructed that should the top roll be brought in contact with the bottom rolls it would be impossible to break any of the gearing.

This friction attachment also admits of a change in position of the top roll while the plate is being passed through and the ma-

chine is in motion. By means of this device plates may be rolled much more speedily than is possible by any of the methods now in use. Double housings are used where the power is applied to the bottom rolls, which admits of large diameters of driving pinions, giving increased strength and durability. These housings are fitted with renewable bronze bearings, which can be changed without displacing the rolls.

A windlass attachment is connected to the engines, and a clutch coupling is used to disconnect the engines from the rolls. This admits of the engines being used for hoisting heavy plates in and out of the rolls, and for doing all work where a steam hoisting apparatus is required. The bearing on one end of the top roll is hinged so that it can be lowered, and when a full course is rolled it can be easily taken out.

The firm now have under construction 16-foot rolls for the Grant Locomotive Works of Chicago; 20-foot rolls for Fraser & Chalmers of the same city, and 18-foot rolls for the Pacific Coast shipbuilding plant of the American Steel Barge Company.

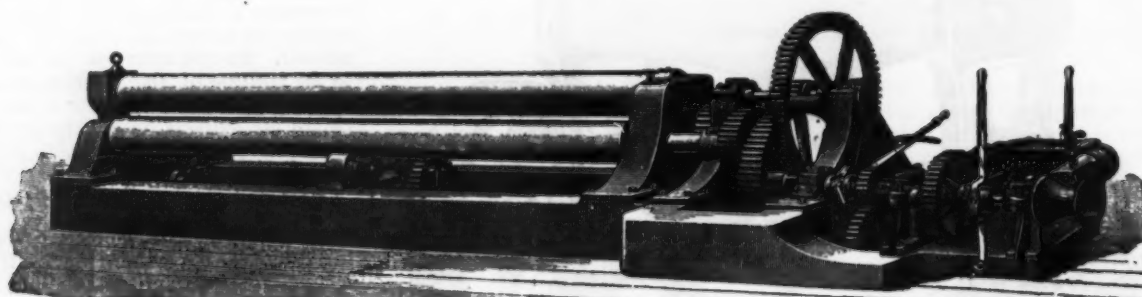
The French are proud of their navy. The Minister of Marine, M. Darbey, in a debate on the naval estimates, said that the building of ships for the navy continued with unabated activity, and that within ten years 81 ships would be built, including six ironclads and 50 swift cruisers. Next year the navy would have over 200 torpedo boats. France, he said,

### Trade Publications.

GEORGE V. CRESSON of Philadelphia has just issued a pamphlet describing the power transmitting machinery, shafting and all its appurtenances made by him. He states that after many years' experience in working out the best method of transmitting power he is prepared to design and execute such work in the most improved manner after carefully considered plans. He says: "It is necessary to consider fully the amount of power likely to be needed for the present and also for the future, and to provide accordingly. The great difficulty heretofore has been to bring these important facts before those contemplating the erection of factories until it was too late to remedy any defects that might exist from this cause. By a consultation with us before beginning the erection of new plants a great deal of money may be saved and the delays caused by improper engineering avoided. The transmission engineer comes first, the architect afterward." The shafting manufactured by these works after being finished is coupled together as ordered and tested, so that no imperfections may be found when erected. Each coupling, shaft and key is stamped with corresponding numbers in order to facilitate erection. The lengths of bearings are four times the diameter of the shaft up to and including bearings for 6 15-16 inches in diam-

Both of these are drop-tube boilers and it is stated that boilers of this type have been used for many years, and for many purposes have given better satisfaction than any other type, owing to their extreme simplicity, accessibility, safety, "quick firing" and ease of repairing. Such a boiler consists of a steam drum or top chamber, into the under side of which are screwed the vertical or "drop" tubes, which represent the greater part of the water surface of the boiler. The tubes are closed by welding at their lower ends, while in the tube, and running its whole length, is inserted a division plate or diaphragm to insure positive circulation; the colder water descends on one side of this diaphragm, and becoming heated ascends on the other; all bubbles of steam generated pass up with the rising column of water, accelerating its motion and separating in the steam dome.

MORRIS SELLERS & Co., 216 Phenix Building, Chicago, have issued a very pretty brochure under the title of "The Track Spike, The Tie, The Splice Bar." There are some 40 pages of letterpress, interleaved with photogravure illustrations of the Greer Patent Spike, recently put on the market by this firm. The Greer spike is shown in comparison with the standard railroad spike under a great variety of conditions, such as the manner in which it drives in the tie without breaking the wood, the greater power required to draw it from the tie, and its greater resistance to lateral pressure against the base of the rail and against the head. It is shown that the life of a wooden tie is prolonged by the use of a spike which holds rail and tie in close contact, prevents the track from spreading and does not tear the fiber in driving. A *fac.*



THE WICKES PLATE BENDING ROLLS.

eter, above which size they are made in special lengths. Mr. Cresson carries an unusually large and varied stock of pulley patterns. The catalogue then describes in detail all the various kinds of couplings, hangers, brackets, bearings, &c., there made.

WE HAVE RECEIVED from Barry, Henry & Co., founders, engineers and millwrights, of Aberdeen, whose London representative is Gilbert Little, 1 Metal Exchange Buildings, Whitlington avenue, E C., a catalogue describing their pulleys, shafting and couplings, spur and miter gears, worm wheels, hangers, pedestals, &c. The catalogue is very complete in all its details and shows clearly the extended line of power transmission apparatus made by this firm.

THE FITCHBURG MACHINE WORKS of Fitchburg, Mass., have issued a pamphlet describing their lathes, planers, boring and drilling machines, shaping machines, bolt cutters and the various appliances and attachments naturally belonging to these lines of tools. The introduction states that all work is thoroughly inspected, and before shipment each machine is belted and carefully tested, in order to insure accuracy in all its parts. Sliding fits are carefully scraped by hand, no emery being used for this purpose. Almost all of the engravings here presented are new, this being made necessary because of changes and improvements made in the several machines since the last edition of the catalogue was presented.

ON THE COVER of a pamphlet issued by the Nason Mfg. Company of 71 Beekman street, New York, we find "10 to 1." This is a treatise on the selection of a house-heating boiler, with a description of the "Equator" for steam and the "Gulf Stream" for hot water.

*simile* is presented of a very favorable report made by the Sheffield Testing Works of England upon the comparative resistance to drawing of the Greer Patent Spike as against the ordinary English form of spike. Some attention is also given to the merits of the Samson Splice Bar, also manufactured by this firm.

WE HAVE RECEIVED an illustrated pamphlet descriptive of the Williams vacuum system of steam heating from the Warren Webster Company of 491 North Third street, Philadelphia, sole licensee for the sale of factory rights of this system in the United States. This system consists, briefly, in arrangement of apparatus for the drawing of steam and condensation through the pipe by suction, instead of forcing the circulation, as in previous practice, by pressure. The apparatus required is simply an attachment whereby a partial vacuum is maintained in the pipe, thus insuring a perfect circulation through the heating coils. It was first introduced by Mr. Williams in 1880 in some of the largest manufacturing establishments in Philadelphia, and has been in constant use since that time.

A recent order has been given to Samson Fox & Co., Leeds, England, for 204 corrugated furnaces, to be used in the two new Cunard steamers to be constructed at Fairfield. The number indicates the immense horse power to be used on these vessels. The Continental Iron Works of Brooklyn, N. Y., manufacture corrugated furnaces in the United States.

The first high-speed compound locomotive built by the Baldwin Locomotive Works has been delivered to the Baltimore and Ohio Railroad.



## THE WEEK.

The Siamese Government have ordered the construction in Scotland of a fast twin screw cruiser of 2500 tons.

Three beet sugar factories in California made this season 8,000,000 pounds.

The Brazilian Government asks for an extension of time for the ratification of the treaty of arbitration recently concluded between Brazil and the United States, showing that friends of the measure encounter strong opposition.

President Gompers of the American Federation of Labor, at the recent annual meeting of the order in Birmingham, Ala., admitted the failure of the movement to establish an eight-hour day in the coal mines. The effort succeeded only where labor was well organized. He condemns boycotts unless approved by the conventions or the Executive Council of the Federation.

The salt product of Michigan last year was nearly 4,000,000 barrels. Manistee leads Saginaw for the first time.

The wheat crop of the United States and Canada is 650,000,000 bushels. Export surplus is 260,000,000; 112,500,000 bushels was exported the past five months, leaving 147,500,000 for the coming seven months.

The Samuel L. Moore & Sons' Company of Elizabeth, N. J., will be ready to launch the naval practice ship about the first of the year.

The Delaware, Lackawanna and Western's new building on Exchange place, in this city, will be ten stories high and cost \$350,000.

J. S. Dix of Omaha is discouraged respecting the beet sugar industry in this country. He claims to be familiar with the operations of the two large sugar mills in Nebraska, also those in California and Utah, and asserts that the cost of the manual labor required in beet culture in this country forbids the hope of successful competition with labor in Germany unless the work can be done by machinery yet to be invented. The difference in labor is the difference between a fair profit and bankruptcy.

A ship canal around Niagara Falls is provided for in a bill introduced by Senator Davis. The canal is to be of sufficient capacity to float vessels of as great length, width, draft and tonnage as can be floated through the St. Mary's Falls Canal and locks when the latter are completed.

It is now learned that the Vanderbilts have purchased and paid the cash for valuable terminals in Denver, and it is believed that a traffic alliance has been already signed with the Denver and Rio Grande and the Southern Pacific. In this way the Vanderbilts ignore the Union Pacific system altogether.

San Francisco shipped wheat and flour in November equal to \$3,500,000, mostly to the United Kingdom. Vessel freights are at the lowest ebb. New Orleans exported in the last three months over 4,000,000 bushels.

A bill introduced by Senator Hiscock at Washington provides that any bridge hereafter erected across either the Hudson or East rivers shall be constructed with a single span over the entire river between the existing pierhead lines on either side, and at an elevation above ordinary high water of at least 140 feet at the pierhead lines on either side, and of at least 150 feet at the middle of the river. Even with the limitations thus prescribed, imposing conditions which only engineering skill of the highest order can overcome, a few

years may see New York City connected with the adjacent mainland in every direction by aerial structures.

Authorities in the Dominion are devising measures to exclude American coin and paper currency from circulation, and the Government organs recommend the imposition of a 10 per cent. tax similar to that imposed in the United States upon Canadian currency. Canadian coinage yields a profit which will be lost if the influx of American currency continues.

Oil traders in the East are trying to persuade England to prohibit the passage of American oil-tank steamers through the Suez Canal. American enterprise is too much for them.

There are laid up at Milwaukee 125 vessels, more than half of them steam, valued at \$4,000,000, and this is but a small proportion of the aggregate lake tonnage.

An Italian dock yard has advanced so far in the art of shipbuilding that it has contracted to build a man-of-war for a foreign power.

The inflammable state of the "Eastern question" is indicated by the consequences of the dismissal of a French newspaper correspondent from the Turkish principality of Bulgaria. Forthwith France breaks off diplomatic relations and orders its consuls to withdraw. Bulgaria then applies to bankers in Vienna for a loan, to strengthen her army. So easily might hostilities ensue and the whole of Europe become involved, affecting the markets of the world. Russia pronounces the Bulgarians "insolent."

A native revolution in Hawaii is spoken of as probable when the elections take place in February, if not sooner. One object is to counteract English influence. Another idea is to establish an independent republic. At present American ideas are paramount in Hawaii and Americans have risen to great influence in the country. In fact, a few rich Americans, such as Claus Spreckels, practically control the sugar industry, the island's main industry.

Senator Quay wants the United States to acquire the Mexican States adjacent to the boundary line, and Senator Call of Florida has introduced resolutions authorizing negotiations for the purchase of Cuba. The three Mexican States named contain a larger area than all New England or the Middle States. Heretofore Americans in their intercourse with Mexico have disavowed any ambition to acquire more territory. The Mexican Minister Romero expresses the opinion that nothing will come of the proposition.

The statistics brought forward by the patrons of the Nicaragua Ship Canal project, to satisfy investors that the scheme will attract an enormous tonnage for transfer between the two oceans, and therefore will prove remunerative from the start, are possibly overdrawn. Some one who has taken pains to examine the details finds it necessary to make many deductions and affirms that "the estimate of tonnage made by the compiler of the pamphlet, as existing within the zone of attraction, is of the most extravagant character, and can never be expected to exist within the range of human foresight." The diversion of trade expected from the San Francisco, China and Japan route is reduced one-half and the conclusion formed that there is a lack of data upon which to base definite predictions, that the chief growth of the Nicaragua Canal business would appear to depend upon the future development of the American continents. That the promoters should entertain an over-sanguine view is but natural. Too many radical factors have yet to be solved.

## American Tonnage in the Carrying Trade.

An interesting exhibit of the forthcoming report of the Bureau of Statistics is the tonnage of the foreign trade of the United States. It appears that of the entire value of our foreign commerce, 6.49 per cent. was carried in cars and other land vehicles, 7.17 per cent. in American steam vessels, 4.79 per cent. in American sail vessels, 73.11 per cent. in foreign steam vessels, 7.96 per cent. in foreign sail vessels, and 0.48 per cent. in vehicles of which the nationality and motive power were unknown. The tonnage entered at ports of the United States in the foreign trade during the year ending June 30, 1891, as compared with 1890, was as follows:

### Entered at Seaports.

	1891.		1890.	
	No.	Tons.	No.	Tons.
American:				
Sail.....	3,152	1,332,468	3,339	1,394,665
Steam.....	2,626	2,333,904	2,096	2,009,919
Totals.....	5,776	3,670,372	5,434	3,404,584
Foreign:				
Sail.....	6,812	2,942,115	6,950	3,071,111
Steam.....	5,607	8,782,124	5,814	8,880,900
Totals.....	12,419	11,724,239	12,773	11,961,020
Total at seaports.....	18,197	15,394,611	18,207	15,365,604

### Entered at Lake Ports.

American.....	5,298	710,432	5,783	678,537
Foreign.....	9,113	2,069,252	9,458	2,063,120
Total at lake ports.....	14,381	2,800,684	15,241	2,741,657

The tonnage entered at the principal ports of the United States in the foreign trade during the fiscal years 1870 and 1891 was as follows:

Ports:	1870.		1891.	
	No.	Tons.	No.	Tons.
New York, N. Y.....	3,063	1,186	6,452	2,877
Philadelphia, Pa.....	300	106	1,351	466
Boston, Mass.....	793	927	1,302	215
San Francisco, Cal.....	303	983	1,093	776
New Orleans, La.....	458	447	885	793
Baltimore, Md.....	272	290	711	833
Lake ports.....	2,885	470	2,809	684
All other ports.....	958	350	3,394	659
Totals.....	9,155	650	18,204	295

## A Marine Railway Completed.

The opening of the big marine railway of the New Jersey Dry Dock and Transportation Company, which has just been completed, on the Kill von Kull, was attended by a large number of engineers and others interested. This railway, which has been built and completed in six months, was designed and constructed by H. I. Candell & Son of Dartmouth, Nova Scotia, who have constructed marine railways in all parts of the world. It is 725 feet long and 80 feet wide, with a capacity of 2000 tons. It has a draft of 13 feet aft and 10 feet forward. The foundation is of four tracks, 725 feet long. The two center tracks are 4½ feet apart and the outside tracks 45 feet apart. The cradle on which vessels are hauled out is 285 feet long and 80 feet wide, and is of a new style, being decked all over, which gives it all the advantages of a dry dock. Vessels are held in position for docking by powerful uprights, thereby dispensing with a dock. The railway is operated by a pair of locomotive engines, 12 x 24, with a link motion, having three different powers for all classes of vessels. Patent adjustable keel and bilge blocks are used. The time required for hauling out a vessel of 1200 tons is 12 minutes.

New Birmingham, Texas, "As it is, October, 1891," is the title of a profusely illustrated pamphlet just issued. This region is rich in iron and lignite deposits which are being developed rapidly. The town is in a region rich in minerals and admirably well fitted for agricultural enterprises.

# The Iron Age

New York, Thursday, December 24, 1891

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - - EDITOR.  
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.  
JOHN S. KING, - - - BUSINESS MANAGER.

## The Lake Superior Ore Statistics.

At first glance the figures of Lake Superior iron-ore shipments from mine ports and stocks at Lake Erie ports, which have been published by the *Cleveland Iron Trade Review*, are not encouraging to the iron-ore interests. It is true that the shipments from all ports for the season just closed show a falling off of over 1,500,000 tons on 1890, which would indicate that the trade was under some control, but on the other hand, the iron-ore stocks at Lake Erie ports at the close of navigation showed only 400,000 tons less than the immense quantity piled up at the corresponding time in the previous year. A stock of 3,500,000 tons of ore looks like a pretty serious weight on that branch of the iron trade. As compared with the statistics of shipments from the mine ports, the stock figures show that about 54 per cent., or a much larger proportion than usual, of the total shipments of the season was on the docks at the receiving ports at the close of navigation. As usual, the claim is made that a very small part of this ore is unsold, but we are assured on good authority that the quantity is considerably larger, probably double the amount named. Still it is not such a menace to the trade as it would be if the bulk of ore were unsold. But, nevertheless, the stock is so large that there is nearly a repetition of last year's conditions, notwithstanding the decreased shipments. The significance of the figures for this year will appear more strongly when shown in comparison with stocks for previous years, as follows:

### Stock of Lake Iron Ore at Lake Ports.

Years.	Tons.	Years.	Tons.
1883.....	943,095	1888.....	1,848,555
1884.....	1,038,135	1889.....	2,607,106
1885.....	1,048,940	1890.....	3,893,487
1886.....	966,472	1891.....	3,508,489
1887.....	1,558,861		

Looking, however, from statistics to trade conditions, the situation is seen to have changed greatly from that of a year since. At that time the pig iron manufacturers were just entering a vale of gloom, and the consumers of lake ores among them were perhaps the most dispirited of the whole tribe. The Mahoning and Shenango valley furnaces were blowing out or banking, in the hope of compelling the coke operators to reduce the price of coke, and furnaces connected with steel rail mills were being laid off on account of the slack demand for rails. Money was tight, financial troubles in Europe were having a greater effect here than had been anticipated, crops were short, and in general the outlook was bad enough

to make all the financial Mark Tapleys rejoice in feeling for once just hopelessly miserable. The situation now is altogether different. While the price of pig iron is undeniably too low for financial comfort, the outlook is in favor of better times in every way. All the conditions are hopeful. The consumption of lake ores during the winter will be greater than ever before. Unless all signs are utterly and totally misleading, the lower lake docks will be pretty thoroughly cleaned up by the opening of navigation in 1892. The huge stocks on dock now will cut a figure in fixing next year's prices if the consumption proves to be what is now foreshadowed. As far as can be ascertained, the mine owners will be very conservative the coming year, and will not force a large output on the market, but will be prepared to mine all that may be needed, even if the demand should prove to be in excess of that of the "big year," 1890. But they propose to get a better price than they obtained this year. To this no furnaceman will seriously object if he can at the same time get a better price for his pig iron.

## National Waterways.

The improvement of national waterways appears to receive greater attention every year. It is becoming a live subject among all classes of business men in widely separated sections of the country. The deep-water convention at Detroit last week and the Western river improvement convention at Kansas City at the same time, were parts of a series of such demonstrations which apparently have no relation to one another, but are a spontaneous development of the views of the mass of business men. It is obvious that the people of the United States have not taken proper advantage of the means of water communication with which nature has so bountifully blessed the country. Before the days of railroads some ambitious efforts were made in this direction, but since the railroad era has set in there has been less attention paid to the development of inland navigation. Hard and persistent work on the part of a few public-spirited or specially interested individuals has accomplished some measures of importance in this direction, but now there seems to have been a general awakening of a popular sentiment, and more comprehensive schemes are receiving enthusiastic support. The commerce of the great lakes has grown to such commanding proportions that better facilities are urged by all the interests involved, which embrace many more people than merely those who own vessels or ship merchandise by them. The demands of that section will not be satisfied until deep channels connect all the lakes in the system and a ship canal to correspond is constructed to tidewater. There will be much opposition to such a scheme on account of its great cost, but its advocates are enthusiastic, powerful and numerous. They point to the fact that the outside estimate of the cost of such a piece of engineering would not be as great as the capital invested in any of the trunk railroad lines between

New York and Chicago, while it would accommodate a traffic of much greater proportions at a much lower cost. Present railroad investments would not be jeopardized by such an improvement in east and west means of transportation, as the growth of the business of the section traversed would be so stimulated as to give the railroads more traffic also. The movement in favor of this great improvement, as well as others advocated by conventions in various parts of the country, has latterly become so strong that it will be singular indeed if the outcome does not prove to be quite a general improvement in the near future of the more important inland waterways.

## Steel for Pipe.

The pipe and tube trade seems destined to soon become that line of manufacture in which soft steel will make its next great inroad upon wrought iron. A very large share of the puddling capacity now active is engaged in producing muck bar to be rolled into pipe skelp, and on the whole the pipe manufacturers have steadily resisted the change. But their apathy is sure to be overcome by the difference in cost in favor of steel. Muck bar has been selling in Pittsburgh at \$26.25, while slabs a few weeks since were purchasable at \$24. The waste, both in heating, in crop ends and in scrap, is decidedly greater with the former along the whole line from crude to finished product.

Since the pioneer work in this direction was done at Wheeling, W. Va., steel skelp has been largely used by other makers, and consumers have had an opportunity to test and to become familiar with steel pipe. One by one the obstacles to the introduction have been overcome. Manufacturers as well as consumers have long learnt to dismiss as groundless the claim that soft steel cannot be welded. With the right kind of steel a good weld can be as certainly depended upon as with wrought iron. We have repeatedly witnessed tests which left no doubt as to the integrity of the weld. In fact, it may be fairly asserted that there is no half measure between a sound weld and an obvious failure.

It has been claimed that it is a very difficult matter to put a good thread on a steel pipe and that therefore it should be condemned. This claim may be dismissed as being as untenable as the one that mild steel often exhibits the much talked of "mysterious" fractures of steel. In this respect it is the old story which welcomed the steel boiler and ship plates, and the steel nail.

We can understand the reluctance of iron pipe manufacturers to give up their puddling plant and to put large sums of money into steel works. But those who cling too long to the old may find their interests seriously threatened, while those who soon follow the lead of a few conspicuously successful younger concerns will keep abreast of progress. Many have already done experimental work with steel skelp and are becoming larger buyers of it



The signs indicate that the pipe trade is the next which will succumb to the victorious advance of steel.

### India's Experience With Silver.

It may be possible for people in the United States to learn profitably from the experience of India in dealing with a redundant silver currency. A year ago traders in that market found themselves overburdened with silver, which poured into that country as the result of a violent reaction from speculation in the United States, and for a time business in every department was threatened with disaster. Some of the occurrences of that time are interesting, viewed in the retrospect. It will be remembered that in anticipation of Treasury purchases to the extent of 54,000,000 ounces a year speculators in New York and London accumulated large amounts, hoping to sell out at a profit. In current phrase, they expected to create a "corner," such as was recently attempted in wheat, and still later in November corn. Contrary to calculations, the Government was able to supply its wants for coinage proper from other sources, irrespective of the sharp fellows in Wall street, the current production of silver proving adequate to the demand. It is shown by those who have watched the market that the superabundant supplies quickly found their way to India, always a free market for silver, lower prices here making a favorable difference of exchange in that direction. Eastern speculators next saw their opportunity, and Indian Government securities were transferred from Bombay and Calcutta to London in enormous amounts, payment therefor being for the most part remitted in silver. As stated in a Bombay paper, subsequent bankruptcy proceedings revealed the fact that it "was not a difficult matter for a firm whose credit was then good to sell large amounts of bills in anticipation of a rise in exchange," thus realizing handsomely from a shrewd operation. Other causes helped to swell this influx of silver, so that the imports made a net aggregate almost unprecedented and far in excess of commercial requirements. A large proportion went to swell the bank reserves. As a result of this plethora, the record goes, "the market value of money sunk to a phenomenally low point," as indicated by the prevailing extremely low rates of interest. The London *Economist*, reviewing the situation at that time, says:

It might have been thought that this altogether exceptional cheapness of money would have imparted a stimulus to trade. But whereas when trade is sound cheap money may spur it forward, cheapness of money is sometimes the result of the unsettlement and restriction of business. And this, unfortunately, has been the case in India. For a time the rise in exchange had a decidedly stimulating effect upon the imports of merchandise, but, writes Mr. O'Connor, of the Department of Finance, "the temporary stimulus . . . caused by quickly rising exchange was of brief duration, and was not unattended with serious difficulties. When the native dealers, who had contracted to buy goods from importers, at prices based upon exchange before it began to rise, saw goods brought into the country and sold at prices based upon rates of exchange which had increased by 13 to 20 per cent. (making a pro-

portionate reduction in price), there was a prompt repudiation of their contracts, accompanied by the declaration that their fulfillment meant insolvency. The position was becoming critical for importers, when, fortunately for them, the rate of exchange began to fall as rapidly as it had risen, and matters were satisfactorily adjusted, though it is believed that the conditions which followed the rise in the price of silver were the cause of considerable losses to importers."

In other words, and more comprehensively speaking, there was a "general dislocation of legitimate trade." Not only this, but there followed an "insane speculation" in gold, which prevailed in Calcutta throughout the year. India became and still remains saturated with silver. Therefore, India may safely be accepted as presenting that kind of a paradise which some of our legislators seek, perhaps unwittingly, to introduce into the United States. The stimulus of cheap money, it is seen from the past, is liable to provoke dire financial disorder, and if "cheapness" results from a depreciated currency—such, for example, as might attend an excessive use of silver—the end is worse than the beginning.

### Insurance on High Chicago Buildings.

The erection of very high buildings in Chicago has at last been very probably checked. Influential bodies of various sorts have declared against them, and the City Council was expected ere this to pass a restricting ordinance. Conflicting opinions as to the height to be named caused a delay, which bids fair to develop in the shelving of the measure. Now, however, an influence has arisen wholly outside of the city authorities which promises to be even more potent than an ironclad ordinance with a fearless corps of inspectors to enforce it. The Chicago Fire Underwriters' Association has adopted the following resolutions, which were presented by a committee to whom had been referred the question as the advisability of limiting the height of the buildings:

*Resolved*, That it is the judgment of this association that all office buildings of non-combustible construction should be limited in height to not more than one and one-half times the width of the street upon which such buildings may be constructed; and on streets of more than 66 feet in width the height of such non-combustible buildings should be limited to 120 feet from the street level to the highest point of the roof; also that all buildings of other than fire-proof construction should be limited in height to 85 feet from the street level to the highest point of the roof.

*Provided further*, That no building excepting office buildings, whether fire-proof or otherwise, shall exceed 85 feet in height from the street level to the highest point of the roof.

The association has further adopted a tariff arranged on a sliding scale, under which the rate of insurance increases with every story, making a practically prohibitory rate on buildings ten stories or more in height. A ten-story mercantile structure now in course of erection, to be of steel frame and tile work with terra cotta veneering, is reported to have been scheduled at \$3.15 per \$100 of insurance, which is such a heavy tax on the earnings of the building that the owner proposes to reduce

it to eight stories. The insurance rate on office buildings is less than on mercantile buildings, but at the same time is prohibitory in case of very high structures.

A few instances are known in which the owners of office buildings are so well satisfied with their fire-proof character that the placing of insurance was never contemplated, even if it could have been secured at an unusually low rate. Not many owners can afford to take such a risk, however, and therefore the action of the Underwriters' Association would seem to be effective in limiting the height of buildings hereafter erected. There is some talk of the organization of a mutual insurance syndicate by the owners of high buildings, but even if such action should be taken it is questionable whether financial institutions would consider it sufficient security for loans which might be sought for high-building projects.

### OBITUARY.

ISRAEL COE.

The life story of Israel Coe, who died in Waterbury, Conn., Friday, at the age of 97, is a history of the brass industry in the United States. It was the proud boast of the old gentleman, when recounting the story of the birth of that industry, that he had aided in rolling the first sheet of brass produced in America. It was also his energy and business sagacity which first brought copper from the shores of Michigan to the brass mills in the Naugatuck Valley.

This great industry had its origin in the making of buttons, for which Waterbury has a just celebrity. When the British war ships closed American ports in 1812 there was a dearth of many things, buttons included. Aaron Benedict tried to fill the latter want, and in a modest way began the making of bone and ivory buttons. His business prospered till the fashions decreed that the proper garment for gentlemen was a snuff-colored coat with gilt buttons. Fashion was stronger than patriotism, and the imported gilt buttons had the preference over the deacon's homely ones of bone. Therefore he decided to make gilt buttons. That required an increase of capital, and he associated with himself in business Israel Coe. That was in the year 1829.

The sheet brass of which the buttons were made had to be imported from England and hauled overland from Bridgeport or New Haven to Waterbury. The competition was close and the receipt of the metal uncertain because of the slow methods of transportation. Moreover, Mr. Coe, with a Yankee's shrewdness, conceived that the buttons might be made of thinner material, thus adding to the profits. The Englishmen could not, or would not, roll the metal as thin as Coe & Benedict desired it, and that prompted them to endeavor to roll metal for themselves. The fact that they had none of the necessary appliances, and not even a supply of copper, did not daunt them. Their meager capital would not warrant an importation of copper. Instead, they solicited from the housewives in Waterbury and vicinity worn-out copper kettles and saucepans. This material, laboriously cut up with chisel and hammer, was melted with the other alloys in an iron furnace (the enterprising firm did not own a crucible) and poured into a rude mold. The uneven slabs of brass thus produced were hauled in ox carts to an old iron rolling mill in Woodville, near the historic town of Litchfield. There they were passed be-

tween the rolls until reduced to the desired thinness, the necessary annealing after each passage through the rolls being done in an open fire of chestnut wood in the mill yard.

Success led them to the setting up of a rolling mill of their own in Waterbury, and from making brass for themselves they began to make it for their neighbors. They thought it a cause for hearty congratulation that in one year they had sold 60,000 pounds of metal. The output now of the brass mills is millions of pounds. The small over-shot water wheel which turned the first pair of rolls owned by Coe & Benedict is now a treasured possession of the Waterbury firm of Benedict & Burnham.

Mr. Coe not only made gilt buttons, but drummed up trade. He noticed on his trips to New York that brass kettles were imported in large quantities. That gave him the idea of an extension of his workings in brass. Acting on the idea, he went to Torrington, near his native town of Goshen, and started there in 1834 the Coe Brass Mill, for the making of brass kettles.

One of his prized mementoes was a gold medal given him by the United States Government in recognition of the fact that he had produced the first brass kettle made in this country.

The industry which Mr. Coe was instrumental in establishing has remained practically in the Naugatuck Valley, where he started it. The center of its activity is Waterbury. There Mr. Coe chose to pass his declining years in a house on a hill, whence he could overlook the forest of tall chimneys in the Brass City he had done so much to create.

CORNELIUS D. DISOSWAY.

Cornelius D. Disosway of the hardware firm of Disosway & Henderson, 165 Greenwich street, New York, died of apoplexy at his home, 554 Hancock street, Brooklyn, on the 19th inst. Mr. Disosway was 49 years of age and had been identified with the hardware trade of this city for many years. He leaves a widow, the daughter of Rear Admiral Aaron Hughes of Washington, D. C., and two children, a son and a daughter.

#### The Record Mfg. Company.

The Record Mfg. Company, Conneaut, Ohio, to whose tin-plate enterprise we recently made brief reference, have bought from Daniel Edwards & Co., Swansea, Edwards Tinning Machines, which have been shipped and are now due at Conneaut. These works are being erected in connection with their present plant, and it is hoped that they will be in operation by the first of the year. The product will be largely for their own use and will be of Siemens-Martin steel plate of Melyn grade. The Record Mfg. Company are large users of tin plates for their patent butter and lard tubs and shipping cans, and also for petroleum and varnish cans, as well as for maple sugar supplies. For some two years past they have been investigating the question of tin plates with a view to securing a quality suitable for their use, and they inform us that the brands heretofore purchased have not always proved satisfactory and have not run evenly. To avoid this trouble they have decided to put up their own works and hope to produce a plate that will prove lasting and satisfactory. They also wish to secure a plate of very ductile metal, as in their work it is subject to especially heavy strains, and say that they have, therefore, decided on the Siemens-Martin plate, being what is known as the hammered steel stamping plate. In addition to making plates for their own consumption they hope to sell in the open market.

#### Improvements at Edgar Thomson.

Since it has been under the management of Charles M. Schwab, the Edgar Thomson Mill of Carnegie Bros. & Co., Limited, Bessemer, Pa., has periodically undergone important changes and improvements. A representative of *The Iron Age*, after a little more than a year's interval between the last and the present visit to the famous mill, noted the following: The Bessemer converting mill, which some time since increased equipment to four 15 ton vessels, is about to undergo a radical change. It has been decided to adopt the system of casting the ingots on cars. The present two pits will be abandoned and a track will be laid along the converters on which two-ingot cars will be brought in by locomotive at one side of the mill and the ingots on them be filled direct from the present ladle cranes. The latter will be changed so as to allow of an increase in the lift of 6 feet. The ingots will be stripped between the Bessemer department and the adjacent blooming mill department. An old building which contained the blowers and some other minor plant has just been torn down and the iron work of the three stripper buildings is up. The stripped ingots will be within easy reach of the ingot charging apparatus for the heating furnaces. The present reverberatory furnaces will be retained for the present. The only new equipment of the Bessemer converting works proper is a Southwark vertical blowing engine very substantially built. It has the Goode positive gear for the blowing tube, but instead of being a swinging grid-iron disk, like that of the Cambria horizontal engine, it has a slide. The enlarged capacity of the Bessemer converters will probably involve the increase in size at a not distant date of the mixers, interposed between the famous Edgar Thomson blast furnace plant and the converting department.

The old blooming mill was some time since supplanted in the incredibly short time of six days by a splendid 40-inch mill, which rolls 4500-pounds ingot into 7-inch blooms in nine passes. A very neat arrangement in connection with the mill is an auxiliary feed table, a short, narrow table placed in front of the table of the train. The next ingot is placed upon this table while the one preceding it is being rolled. As soon as it leaves the last pass the ingot waiting on the auxiliary table is fed to the train table by simply raising the former, thus the time is saved which is otherwise lost in getting the next ingot into place on the roll table. We understand that the saving in time amounts to about 15 per cent. In connection with the delivery of the bloom ends to cars the question of making one car pass another on the same track has been solved. The bloom ends are conveyed underground laterally from the shears to a short incline upon which run two cars by wire rope. The lack of space did not allow of their being placed side by side, since both must deliver to a car end on. At the meeting point of the two cars is a track section whose two legs form an obtuse angle, and which rests on trunnions at a height above the stationary track to allow one car to pass clear under it. The one set of legs of this false track rest upon the stationary track at the upper point, thus causing the descending car to mount it while the ascending car is coming under it from below on the stationary incline track. As soon as the descending car has got beyond the trunnions its weight tips the false track until the other legs rest upon the lower part of the incline track, the tipping at the same time clearing the way for the ascending car.

The hauling of the bloom-charging apparatus by wire rope along the line of bloom-heating furnaces has been retained,

but the mechanism of the apparatus itself has undergone some modification. It consists simply of a boiler and a long steam cylinder mounted for a car. It has been found practically impossible to avoid a jerky motion of the piston when moving it with steam applied directly. This drawback has been overcome by a very simple expedient. Steam is admitted in both sides of the piston, and is then exhausted from that side in which the piston is to move. A very steady, uniform motion is thus attained. On the drawing side a simple contrivance provides for the automatic seizing and releasing of the reheated bloom by the tongs. A small cylinder, which receives its steam through the piston rod, causes the ends of the tongs to hold the bloom as soon as they embrace it, while on the return stroke a rod trips the valve automatically, and releases the bloom.

To rolling mill managers, the device by far most interesting which has been lately introduced at Edgar Thomson is that of rolling several pieces simultaneously on the intermediate train. A piece coming from the roughing train passes through the lower rolls. The table then raises it to the second pass between the upper rolls. While this first piece is thus coming back, a second piece has advanced on the driven rollers to the intermediate train, striking there an automatic stop if it arrives too early, but immediately entering the first pass if not held back by the stop. Thus the intermediate train is simultaneously rolling two rails, in opposite directions. Aside from the very great increase in the capacity which this arrangement involves, it has other marked advantages so far as the strains on the machinery are concerned. We understand that at times three pieces have been rolled simultaneously between the rolls on this intermediate train. We may note it is now driven by a new Porter-Allen horizontal engine, 54 x 66 inches, running 100 revolutions. It is probable that all the improvements now under way will notably affect the capacity of the great Edgar Thomson mill and considerably reduce its operating cost. That its productive capacity over long periods has not yet been attained is thoroughly shown by the recent breaking of the 24-hour record. On the day in question the output was 1924 gross tons, with an aggregate loss of time of 3 hours and 5 minutes. In 2 hours straight work, during that day, the enormous total of 205 tons was reached. It seems probable that, under the management of Charles M. Schwab, the great Carnegie mill will have some new records in 1892.

#### Chicago Electric Lighting.

The Edison General Electric Company of Chicago are about to very greatly enlarge their electric light plant. It is claimed that the company have already the largest central illuminating station in the world, and its construction was a pet project of Mr. Edison. The system includes between 50,000 and 60,000 incandescent lights and about 5000 arc lights. At 4 o'clock each afternoon the dynamos carry a load of electricity capable of furnishing 32,000 lights. The maximum supply expected for winter will be equal to the work of furnishing 35,000 lights. On a recent gloomy day, when it became suddenly dark, the machinery in the present station was made to yield the equivalent of 1250 horse-power in six minutes, a feat that had never been achieved under similar conditions.

The present plant is considered a model one, but the proposed station will leave it far behind in many important points.

When Mr. Edison was in Chicago last winter he made a careful survey of the city, with the object of having several changes made in the matter of furnishing



light. The station on Adams street he considered too complete in its way to dispense with altogether, but decided that it would be a valuable auxiliary to the projected plant.

The new station will probably have a capacity of from 5000 to 10,000 horsepower, which, on a rough calculation, means capacity to furnish from 100,000 to 150,000 lights. All its power will be utilized for the north and northwestern divisions of the city, and that at present created by the Adams street station will be diverted entirely to the business part of the city and the west side. The one on Wabash avenue on the south side will be used for that part of the city, and its capacity is sufficient for the requirements of years to come.

The Cost of Tin Plate.

We present below a statement of the cost of manufacturing tin plate of a medium grade, based upon the figures prepared at the end of last year by a leading Welsh maker for a friend in the United States. In a second column is the equivalent of the English cost in American money, while the third gives the estimate of American cost, made by a rolling mill man of wide experience:

To make 16½ boxes IC plate.	Cost in Wales, English money.	Equivalent in money, 1/ at 24¢.	Cost in the United States.
1 ton steel 7 x ¾ bars.....	£ s. d. 5 2 6	\$24.60	\$35.84
Less 486 pounds shearings. ....	9 0	2.16	2.34
Available at.....	4 13 6	\$22.44	\$23.50
Rolling.....	4 6	1.08	4.85
Behinding (catching).....	1 3	.30	.....
Doubling.....	3 8	.88	2.47
Furnacing (heating).....	3 1	.74	2.10
Shearing.....	1 8	.40	2.43
Opening.....	1 0	.24	.76
Cold Rolling.....	1 0	.24	.82
Annealing.....	1 6	.36	.82
Pickling.....	1 8	.40	1.65
Tinning.....	4 0	.96	1.98
Washing.....	4 0	.96	1.82
Rising.....	1 2	.38	.68
Rubbing and dusting.....	1 0	.44	1.23
Assorting boxes, &c.....	2 6	.60	1.65
2½ pounds tin per box, or 41½ pounds per 16½ boxes.....	1 14 4½	8.25	8.71
Allowance for scruff.....	1 0	.24	.27
Coal.....	6 6	1.56	1.80
Acid.....	6 0	1.44	1.84
Palm oil.....	6 6	1.56	1.32
Wood boxes.....	6 1½	1.45	1.55
Bran and middlings.....	2 6	.60	.60
Annealing boxes (wear and tear).....	1 4	.32	.82
Castings, &c., in the different departments (wear and tear).....	3 0	.72	2.00
Management and clerks.....	2 0	.48	1.50
Other labor and trade expenses.....	6 0	1.44	4.50
Rates, taxes and bank charges.....	3 2	.76	1.25
Cost of 16½ boxes.....	10 4 9	\$49.14	\$80.92
Cost of one box.....	12 6	2.97	4.90

It will be observed that the estimate of the American cost is based on tin-plate bars costing \$32 per net ton, or \$35.84 per gross ton, and that the allowance for scrap is low. With tin-plate bars selling at \$30 per gross ton, and an allowance of \$15 per ton for scrap, the cost of the plates would figure down close to \$4.50.

The Pittsburgh Reduction Company of New Kensington, Pittsburgh, are marketing the Richards' aluminum zinc, a material which contains 2 per cent. of aluminum and is selling at 25 cents per pound. It is used to improve the quality of brass, for which additions of 1 per cent. are usually made, and is very widely being in-

roduced for galvanizing. A small percentage of aluminum in the spelter used in the galvanizing has an extraordinary effect upon the coating of the iron and steel, making it very much more brilliant. We understand that the Apollo Iron and Steel Company of Apollo, the Mansfield Mfg. Company of Warren, Ohio; Pratt & Cady, at Hartford, Conn.; the Walworth Mfg. Company, Burnham, Eaton & Cole of Bridgeport and Nathan Trotter & Co. are using aluminum zinc in their galvanizing departments.

San Francisco News.

We have had good crops of almost everything, and for all cereals good prices. Our farmers' sales of wheat have been almost exactly double those of last harvest year to date. All along the coast, from Puget Sound to San Diego, the wheat, oat and barley crops have been good, and Oregon and Washington will no doubt add 600,000 tons of wheat for export to California's 900,000 — some say 1,000,000 tons. A wheat crop for the coast of 2,000,000 tons, including foreign export, seed and home consumption, is worth at a moderate estimate \$64,000,000, of which \$60,000,000 will go the agriculturists. As this is at least one-third more than the

the same boom subsidence, which, however, took place a couple of years ago, and by low prices for raisins and canned and dried fruits. But we confidently expect to witness the quietude of the fall of 1891 succeeded by an increased activity in the spring of 1892. We have had sufficient rains to prepare the earth for plowing, and enough fine weather to enable the farmer to profit by the state of things brought about by the timely rains. From now on to the end of the year there will not be very much in hardware and metal establishments beyond the taking of stock and laying out the campaign for another year.

The development of the tin resources of Southern California and the coast—to speak more exactly, the making known of them—has progressed with tolerable rapidity. San Diego County and Arizona have been the places where the best prospects have been found. As regards those already worked, James Van Allen, formerly professor of assaying at Cornell University, says: "I shall go back East, proclaiming the Temescal Tin Mines the richest of the kind I have ever known, and I have spent a month in the Cornwall mines." He believes that in three years the annual value of the output will be \$1,000,000 a year. About \$570,000 has been expended on the mines thus far, and now 120 tons are being crushed daily. About 1700 pounds of block tin is being produced every day, for which there are calls from every part of the country. As to Australian tin, the imports and the demand have dropped off for the past couple of months, and the market is very dull at a nominal figure of 21 cents. No Temescal tin yet comes to this market except as a curiosity, which is rather strange, considering the large quantity we use, but I suppose the Eastern people will have to be supplied before those of California, where the tin is produced. There is, however, practically no demand here at present, so that it is no wonder that none to speak of comes this way. The tin-plate market at present is dull and dead at \$6.50 spot, \$6.10 to arrive. The pig iron market has not yet recovered from its heretofore reported sluggishness and at this time of the year it is not likely to. Demand is very light and prices quoted nominally at \$23 to \$25 for the various descriptions of Scotch, English and American. Owing to the strike, the consumption will be smaller this year than in many former ones, and as imports have been free we will close the year with a considerable stock. Imports of iron of late have been pretty considerable. The Sierra Pedrosa brought 250 tons of scrap, the Argus 400 tons of pig iron, the Star of Austria 1000 tons of scrap, the Collesiae 1620 tons of rails and scrap, while we have had 1100 tons of American pig per James Drummond. The latter vessel also had considerable consignments of steel rails, bar and bundle iron, pipe iron, wire, &c.

Imports by rail continue free. For the past two weeks: 3 cars of hardware, 11 cars of machinery, 19 cars of iron, 27 of steel, 15 of stoves, 6 of wire, 11 of pipe, 3 safes, 12 of agricultural implements; total, 107 cars; 57,484 pounds of copper, 33,271 pounds of lead, 29,800 pounds spelter, 35,377 pounds zinc, 208 kegs nails.

There has been but little done as yet in the matter of transportation. The Traffic Association still keeps organizing and Traffic Manager Leeds is engaged in studying up the situation and marshaling his forces. He believes more in persuasion than in coercion and there is little doubt that if the objects of the association are to be accomplished at all they will be in this manner. Meanwhile the association grows stronger numerically day by day, and associations are forming all over the State and being affiliated with that at San Francisco. The State Board of Trade, which was supposed to be inimical to the objects of the

farmers obtained in 1890 it goes without saying that business should be brisk. It was not, however, except for a limited portion of the fall, and every one is asking the reason why. That is something, however, not readily answered, though some say that matters have been dull, too, in Eastern trade circles, and that we are simply suffering through sympathy. There is as much in this as in any other explanation, and there can be no doubt that the effect of the good crops will be felt in due time, and that California, Oregon and Washington will show lively times in the hardware and metal trades next year. Puget Sound has been affected by the subsidence of the boom and the low price of lumber. Southern California by

association and to be dominated by railroad influence, has joined hands with the Traffic Association. One of the moving spirits here is, however, W. H. Mills, owner of the *Sacramento Record-Union* and land agent of the railroad, as also one of the ablest of the railroad men in the State, who no doubt recognizes that the true policy is one of conciliation and that policy is the best which tries to make the interests of the road and the merchants and farmers harmonize. By the bye, speaking of low freights, it is rumored that a number of whalebacks to carry freight between this city and New York will be built on Puget Sound. The truth is that San Francisco, by the command of the sea, has the settlement of this freight question in her own hands.

#### Cost of the Manchester Ship Canal.

Two reports of much importance have been presented to the directors of the Manchester Ship Canal, as to the expected increase in the cost of that work. The first of the documents emanates from three members of a sub-committee appointed for the purpose of examining reports and estimates submitted to the full board by the company's engineer and the corporation engineer. At the outset these gentlemen point out that the estimate prepared by the corporation engineer, dated 26th February, 1891, for the completion of the works as from the 1st January, amounted to £3,579,676, being £350,981 in excess of the company's engineer's estimate for the same period, and that the excess provided by the corporation engineer was intended to cover the probable enhanced cost of construction and contingencies.

The revised estimate under consideration shows an increase of £863,595 over the company's engineer's estimate of January 1, which amounted to £3,228,695, and of £512,614 over that of the corporation engineer of February 28, which amounted to £3,579,676, after deducting the amount provided for increased prices and contingencies (£350,981). The company's engineer, however, states that the sum of £31,000 may be saved by lowering the water level between Mode Wheel and Barton Locks so as to excavate the rock in the dry, and the further sum of £5000 by the construction of a temporary swing bridge over the Weston Canal. After deducting these savings, which amount to £36,000, the increase over the estimate of the corporation engineer is reduced to £476,614. The increased amount of £476,614 includes an item for the purchase of stone amounting to £83,556, a good deal of rock in several of the cuttings which have only been completely opened out during the present year having proved soft and unsuitable either for pitching the slopes of the canal or for protecting the estuary embankments. The remainder of the excess—£393,058—has been rendered necessary by the exigencies of the construction of the works, and is due to additional quantities, which were unforeseen by the company's engineers when the January estimate was prepared.

In the original estimates submitted to Parliament the amount of excavation, including dredging, was stated to be 42,252,041 cubic yards, whereas the revised estimate shows an increase of 7,936,951 cubic yards. The investigations of the committee have enabled them to conclude that a considerable amount of work included in the revised estimate need not be done in order to open the canal for the passage of ships to Manchester, and they recommend that all work that is not essential to the opening of the canal for traffic should be postponed. The estimated amount of work that may thus be postponed is about £364,000. The committee are of opinion that the canal may be opened to Manchester for public traffic in

the spring of 1893, provided the works be pushed forward as vigorously as at present.

The financial position of the company has been carefully examined, and the three signatories consider that the available assets will be more than sufficient to provide for the opening of the canal to Manchester. If the recommendation as to postponing certain works be carried out there will, in fact, be a surplus of £467,977. The deferred assets of the company, which have not been taken into account in this statement, consist of the plant, said to be worth £500,000, which, for the purpose of the report, is taken at £400,000, and the surplus lands, which are taken at the moderate estimate of £1,000,000.

Assuming, therefore, that the available assets will be wholly absorbed, there will be an eventual surplus of £1,400,000. The realization of that portion of the available assets which consists of unissued first and second mortgage debentures is contingent on their being sold when offered to the public, but as these debentures are a first-class security, having behind them £8,000,000 of share capital and £3,000,000 of corporation debentures, they will, the committee have no doubt, be taken up when the board is prepared to offer them.

#### PERSONAL.

Samuel W. Forter, for some time past connected with Julian Kennedy, engineer and contractor, of Pittsburgh, in the capacity of draftsman, has accepted a similar position with the Pittsburgh Iron and Steel Engineering Company. Mr. Forter assumes the position of engineer of the Iron and Steel Works Department, while John McGeorge has been given charge of the department including water, steam and electric power plants, machinery for handling coal and other material and gas producers.

F. F. Wheeler, secretary of the Albany (N. Y.) Chamber of Commerce, who was successful at the Deep Waterways Congress at Detroit last week in introducing the Hudson River deepening resolution, will leave soon after the holidays for a trip through the South, Mexico, California and Oregon for the purpose of recuperating his health.

We have already noted the fact that W. H. Borntraeger, for many years general superintendent of the Upper and Lower Union Mills of Carnegie, Phipps & Co., Limited, at Pittsburgh, has been compelled to retire from active work on account of failing health. Mr. Borntraeger has decided to remove to Southern California until his health is restored. On his return he will become a consulting partner in the Carnegie interests. P. R. Dillon of the Beaver Falls Mills, succeeds Mr. Borntraeger as general superintendent of the Upper and Lower Union Mills.

Alfred Cribbin, general manager for Jas. P. Witherow, engineer and contractor, Pittsburgh, Pa., sailed for England on Saturday, the 12th inst. Mr. Cribbin goes abroad on a pleasure trip and will remain for two months.

E. W. Davis, for some time superintendent of the Fifth Avenue Traction Line, Pittsburgh, operated by the Pittsburgh Traction Company, has tendered his resignation, to go into effect on January 1, 1892. On that date he will assume the management of the works of the Marshall Foundry and Construction Company, located in Pittsburgh.

Secretary Tracy has granted an extension of 12 months to Harrison Loring of the City Point Iron Works, Boston, for the completion of cruiser No. 11. The

vessel will be ready for service May, 1893. The time for completing the four tugs which were also in course of construction at this yard at the time of the failure has been extended four months. These extensions will enable the assignees to complete the vessels named without forfeiture of money.

## MANUFACTURING.

#### Iron and Steel.

The reported dissatisfaction among the workmen in the armor plate department of the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa., is without foundation. The basis of the dissatisfied feeling was said to arise from the fact that steel billets are and have been for a long time selling for less than \$25 per ton, and that under present conditions there is no prospect for an increase in wages. The facts in the case are that wages at the Homestead Steel Works are adjusted quarterly on the sliding scale arrangement with steel billets as its base. The base of the scale is now \$25 per ton for steel billets, and while billets have sold at considerably less than that figure, wages are still being paid based on billets at \$25 per ton. The present sliding scale arrangement continues in force until July 1, 1892, and until that time it is thought that the workmen will continue to abide by its provisions as they have done in the past.

In the courts at Pittsburgh last week there was entered for record a mortgage for \$225,000 given by Carnegie, Phipps & Co., Limited, to Robert Patterson. This is a mortgage to secure purchase price for 54 acres of land immediately adjoining the site of the Allegheny Bessemer Steel Works, at Duquesne, Pa. The life of the mortgage is 11 years, while the price to be paid is over \$4000 an acre. The report that the firm will utilize this property for the erection of an armor-plate mill is untrue. It has not as yet been definitely decided for what purpose the property will be used, but it is believed that the erection of several blast furnaces for the purpose of supplying molten metal to the Duquesne billet mill has been considered by the firm. It is not improbable that the erection of these furnaces will be commenced during 1892.

The Niles Iron and Steel Roofing Company of Niles, Ohio, have just received an order for 750 squares of corrugated iron to be used in the new buildings in process of erection by the Allequippa Steel Company, at Allequippa, Pa. Notwithstanding the fact that this is an off season of the year, this firm are kept constantly busy, and the prospects are that in the near future they will be obliged to enlarge their already commodious works to meet the requirements of a fast increasing trade.

The style of the firm known as the S. R. Smythe & Laughlin Company, engineers and contractors, Lewis Block, Pittsburgh, Pa., has been changed and in the future will be known as the S. R. Smythe Company, incorporated.

Lucy Furnace No. 2 of Carnegie, Phipps & Co., Limited, at Pittsburgh, Pa., has blown out temporarily in order to permit some necessary repairs to be made.

The Toledo Rolling Stock Company of Toledo, Ohio, have been formed for the manufacture of railway rolling stock, and will also purchase, lease and sell same. The capital stock is placed at \$1,000,000. Sheldon C. Reynolds, Charles L. Reynolds, Abram W. Cotter, Frederick J. Reynolds and Emery D. Potter, Jr., are identified with the new concern.

Brown & Co., proprietors of the Wayne Iron and Steel Works of Pittsburgh, have made application for a charter of incorporation, the name and capital stock of which have not as yet been decided.

A deal of transfer of ten properties and stores located at Johnstown, Dunbar, Hamilton, Hollidaysburg and Birmingham, from the Cambria Iron Company to the Penn Traffic Company, has been entered at Hollidaysburg, Pa., for record. The consideration is \$70,000. The personnel of the Traffic Company is unknown, but it is thought it is a corporation formed for the purpose of running the company store system, the transfer thus taking the stores off the hands of the Cambria Iron Company.

Referring to the demands of the blast-furnace operators in the Mahoning and Shenango valleys for a reduction in the coke rate from the Connellsville region to those places, we are advised by one of the largest furnace operators in the Shenango Valley that the claim of the valleys for the reduction is based on the present freight rate from the Connellsville region to Pittsburgh, the rate being 45 cents, with terminal charges of 25 cents, or a total of 70 cents per ton. The valleys being about



double the distance from the Connellsville region that Pittsburgh is, claim the freight should not be more than double that, or 90 cents, and 25 cents terminal charges, or a total of \$1.15 per ton, instead of \$1.35 per ton, the rate now in force. Our correspondent expresses his belief that the railroad companies will in time concede the fairness of this claim and the furnacemen are still hopeful that it will be allowed.

The Western Pennsylvania Mining Institute will hold a two days' session in the Court House at Pittsburgh, on Friday and Saturday, December 18 and 19. A good programme of mining topics has been prepared.

The Holcomb Brown Iron Company have been incorporated at Burlington, Iowa, with a capital stock of \$350,000.

Park, Brother & Co., Limited, proprietors of the Black Diamond Steel Works, at Pittsburgh, will increase their present capacity by the erection of two new mills. A 10-inch billet mill, in connection with a 10-inch tire and hoop mill, will be erected, and will be operated by a 30 x 48 inch engine. The contract for the erection of the mills and engine has been secured by Mackintosh, Hemphill & Co., Limited, of Pittsburgh.

Wm. Tod & Co., engineers, founders and machinists, of Youngstown, Ohio, have just completed a new erecting shop, 80 x 170 feet in size, in which they have placed a 30-ton three-motor electric crane, furnished by the Morgan Engineering Company of Alliance, Ohio. This building will also contain a 1-foot Pond planer, a pit lathe capable of turning wheels 35 feet in diameter and 10-foot face. These were furnished by Hoffman & Bilings of Milwaukee, Wis. Wm. Tod & Co. are proprietors of the Porter-Hamilton blowing engine, and are filling orders for quite a large number of them. The entire plant is being operated full time, and the outlook for the coming year is exceedingly bright.

The Bostwick Steel Lath Company of Niles, Ohio, advise us that they are keeping their machinery very warm, and have orders ahead for some time. The firm have recently made shipments of their lath to be used in three large buildings now being constructed on Market street, San Francisco, Cal., over 21,000 square yards being required for these buildings. They are also shipping to Chicago 25,000 square yards to be used in the large apartment buildings to be erected on the corner of Twelfth street and Michigan avenue in that city. In addition to the above they have many other smaller orders to fill. The firm believe that the coming season will find them with more business than the past, and they expect in the near future to double their present capacity.

The new plate train of the Wellman Iron and Steel Company of Thurlow, Pa., has been started. The train, which was built by the A. Garrison Foundry Company of Pittsburgh, has rolls 132 inches wide. It is driven by a 40 x 60 Corliss engine, built by Robert Wetherill & Co. of Chester, Pa. The train is commanded by a 30-ton Morgan electric crane.

Hoopes & Townsend of Philadelphia, the well-known manufacturers of bolts, nuts and rivets, are increasing the already large capacity of their rivet department. In order to handle the goods quickly and economically they are throwing out their power winding cranes, and replacing them with the Ridgway steam-hydraulic system of cranes.

At the Riverside Iron Works, Wheeling, work is progressing rapidly on the new 21-inch skelp train, with three stands of rolls, three high, to be driven by a 36 x 48 inch engine having a 60,000-pound fly wheel. This train is specially intended to roll skelp up to 22 inches, the works having been exceedingly successful in slitting skelp to various sizes for use in the manufacture of steel pipe. The train in question is to be served by two heating furnaces, for which the necessary equipment of four producers has been put in. It is expected that these will make 3 tons per heat, and will turn out seven heats per day. They are to be served by a double cylinder crane, with 32-foot jib and 26 feet high. A further improvement to be made at the Riverside works will be the entire renewal of the roll tables of the blooming mill and the putting in of a manipulator like that in use at Johnstown and at Jones & Laughlin. These will facilitate the work of squaring the edges of the slabs.

The W. Dewees Wood Company, manufacturers of Wood's patent planished sheet iron, some time ago made application for space at the Columbian Exposition, and the firm propose to have on exhibition there samples of all goods manufactured by them.

The Aliquippa Steel Company, who are building a large new open-hearth and crucible steel plant at Aliquippa, near Pittsburgh, expect to have it ready for operation early in the spring. Instead of the usual hydraulic

system, with pumps and accumulator, they have decided to adopt the Ridgway steam-hydraulic system and orders have been placed with Craig Ridgway & Sons of Coatesville, Pa., for an equipment of cranes.

Girard Furnace of the Girard Iron Company, Girard, Ohio, after a phenomenally successful run of nearly five years, is now out of blast for repairs, which will include a general overhauling of the furnace. As soon as these are completed, which it is expected will be about February 15 next, the furnace will immediately resume blast. This stack, under the management of Henry B. Shields, has achieved a record for length of blast and production which we do not think has ever been surpassed, and in very few cases has been equaled.

In the courts at Pittsburgh last week Shoenberger & Co., proprietors of the Juniata Iron and Steel Works of that city, filed a bill in equity against the Equitable Gas Company. The plaintiffs state that they have been using natural gas for fuel in their mills, and all their furnaces and machinery have been adapted at a great expense, to the use of gas. In July, 1891, they entered into an arrangement with the defendant whereby they agreed to subscribe for \$50,000 worth of the stock in the gas company, and were to be supplied with gas, paying for it at the rate of 25 per cent. higher than they had paid the Philadelphia company. The defendant company, it is alleged, have been furnishing them a partial supply of gas. At times the supply was deficient by reason of an illegal preference allowed other parties. They have been notified that there is not sufficient gas to supply other persons who have precedence over them, and that therefore the supply would be stopped. The plaintiffs assert that the company have no right to give others a preference, because they are stockholders and directors. They claim that to shut off their supply and compel them to return to coal would do them great damage, and cost them at least \$50,000 to change the furnaces, machinery, &c. An injunction was asked for to restrain the company from shutting off their supply and prevent them from giving any preference to others, the company, it being claimed, having plenty of gas.

The Deer Lake Furnace, at Ishpeming, Mich., has blown out.

The Carolina Iron, Mining and Investment Company have been organized, with a capital stock of \$1,000,000. The property consists of magnetic iron mines near Danbury, Stokes County, N.C.

The furnace of the Franklin Iron Mfg. Company, at Franklin Iron Works P. O., N. Y., has been blown in after an idleness of about three months.

#### Machinery.

The Pennsylvania Diamond Drill Company of Birdsboro, Pa., are building a turret track 18 to 23 feet in diameter for the United States battle ship Texas, which is now under construction at Norfolk, Va. The same firm are also building the Brown segmental wire cannon.

The Thayer Water Gas Furnace Company of Pittsburgh, Pa., have been chartered, with a capital stock of \$5000. The following are the incorporators of the new concern: Wm. C. Thayer, Jno. Oakley, Thad. Sumner, Jno. D. Armstrong, Robt. D. King and Edward B. Scull.

The Westinghouse Electric and Mfg. Company of Pittsburgh, Pa., have just equipped the Los Angeles Consolidated Electric Company with some of their improved machinery. The road at present is 32 miles in length, and 10 more miles are being constructed. Thirty cars are now running, to one-half of which are attached the Westinghouse gearless motor, and to the others the single reduction motors. The entire car equipment will eventually consist of 70 cars.

The works of the Westinghouse Air Brake Company, at Witherding, Pa., which have been working only seven hours per day and five days per week, have gone on full time, but only work five days per week, no work being done on Saturday.

H. Bickford, Lakeport, N. H., is introducing a line of boring and turning mills, 4, 5 and 6 feet swing, with single or double heads, and several new features, which are described as follows: The tool spindle is 6 inches in diameter, octagon shape, bearing on alternate sides, furnishing bearing with very little friction and good provisions for taking up wear. The spindle is operated at any angle, has quick hand adjustment and powerful automatic feed in all directions. The heads are right and left, so as to work close together, and will feed in same or opposite directions, the feed being entirely independent. The right spindle runs over the center for boring and the spindles have direct counterbalance in any position. The cross rail, saddles,

spindles and all journals are scraped to a fit. The tool can be set in any position in the steel tool holder, and the latter may be removed to substitute any kind of boring bar. Both 5 and 6 foot take 26 inches under cross rail; 4 foot, 30 inches.

The Wright Machine Company, at Worcester, Mass., are building an additional machine shop 100 x 42 feet in size.

The Locke Machine Works, at Bradford, Pa., have been burned at a loss of \$10,000.

The Ray Valve Mfg. Company have been incorporated at Elizabeth, N. J. The capital is \$100,000, one-half of which is already paid in and will be used in starting works in Linden County, N. Y.

The Rensselaer Mfg. Company of Troy, N. Y., makers of the Rensselaer valves, have found it necessary to increase their foundry capacity. After investigating various handling appliances they have decided to use the Ridgway steam-hydraulic cranes, orders for which have been placed with the builders.

#### Hardware.

The Wire Goods Company of Worcester, Mass., have put in an extensive plant for the manufacture of bicycle spokes. They have superior machinery designed especially for this purpose, and are prepared to supply all the varieties and sizes that may be called for. They have already booked some large contracts for this season's delivery, and we are informed that they can supply almost any demand.

The Caldwell Mfg. Company, Rochester, N. Y., manufacturers of the well-known Caldwell sash balance, report a very large increase in trade for 1891. The company have perfected new labor-saving machinery, and are making arrangements to double their plant the coming year, to meet the widely growing demand in all branches of their trade for house windows, car windows, showcases and ship windows.

The Haley Mfg. Company, manufacturers of steel springs, Concord, N. H., report business satisfactory. They have recently commenced the manufacture of springs for electrical purposes, and have just completed an addition to their wire room.

S. P. Babcock, Adrian, Mich., advises us that he is making improvements in his planters and pushing their sale with good success. His orders for this time of year are larger than ever before, and he looks forward to a splendid trade for the coming season.

The Perfection Scale Company, formerly of Philadelphia, have moved their stock of tools and machinery to Cortland, N. Y., and will occupy the shops to be vacated by A. R. Peck about January 1. David Hallock is in Cortland superintending the work. The company will employ about 20 skilled workmen, and will begin work soon after the new year opens.

North Wayne Tool Company, Hallowell, Maine, manufacturers of the Brooks hay knives, corn and tobacco hooks and band knives, have found it necessary to increase their facilities. Owing to the constantly increasing demand for these goods they have been unable to make a sufficient quantity of them to fill orders in connection with their axe and scythe manufacture. They are now erecting and equipping a new building to be used exclusively in the manufacture of these tools, and expect to be able next season to fill all orders promptly.

The Crown Horse Nail Company, Watervliet, N. Y., have sold to the Troy Malleable Iron Company a piece of ground which is referred to as having peculiar advantages for manufacturing purposes. The premises are at the junction of the New York Central, Delaware and Hudson railroads, and are also intersected by the Erie and Champlain canals. Material and manufactured goods can be shipped by any of these routes, and also by the Fitchburg Railroad. The Troy Malleable Iron Company will erect suitable buildings, to which will be brought their machinery from their Troy and Albany factories; and with enlarged facilities and lessened cost of transportation expect to reduce the cost of production and enlarge their output.

#### Miscellaneous.

The Home Natural Gas Company of Butler, Pa., sold their plant recently for \$157,000. Geo. V. Foreman of Buffalo, N. Y., is said to be at the head of the new company who purchased the plant. The plant is said to be a valuable one, being in good order and having an abundance of gas for both fuel and illuminating purposes.

The Nubian Iron Enamel Company of Cragin, Ill., have had a most successful year. Now that they are "rounding up" the season and are able to make a close comparison with previous years, they find that their trade for 1891 was far in excess of anything before accomplished, being 40 per cent. greater than that of

1890. They make everything used for painting iron, and in some departments are now the largest makers in the United States. The company state that this trade has been established by guaranteeing every gallon of goods they make to suit the buyer, or they take them back and refund all freight and other costs entailed by the trial. All their paints have the special advantage of an admixture of Bonnell's Nubian, which they claim to be the most elastic of all iron paints.

The Cox Brass Mfg. Company, Limited, of Albany, N. Y., have elected the following officers: President, P. Wendell Parke; vice-president and general manager, John Cox; secretary and treasurer, A. B. Brown; directors, P. Wendell Parke, John Cox, A. B. Brown and Peter F. Gaynor.

Among newly projected Illinois corporations are the following: Pioneer Tin Plate Company, at Joliet; to manufacture sheet iron and tin, galvanized sheets, &c.; capital stock, \$125,000; incorporators, J. Palmer O'Neil, J. Davis Lewis and N. D. Lewis. The Leavitt & Oglevee Company, at Maroa, Macon County; hardware and farm implements; capital stock, \$25,000; incorporators, T. N. Leavitt, W. H. Oglevee and E. J. Carter. The Dorman Dynamo Company, at Chicago; to manufacture and operate dynamo electric machinery of every description; capital stock, \$1,000,000; incorporators, George E. Dorman, J. K. Pummelley, Charles King, Louis Huebner and David T. Foley. Chicago Humane Fence Company, at Chicago; to make wire fence; capital stock, \$60,000; incorporators, Oliver Colborne, R. B. Bacon and J. K. Wilson.

The factory of the New Monitor Works at Aurora, Ill., caught fire on the 16th inst., and was totally destroyed. Stock and machinery were insured for \$12,000 and invoiced at about \$20,000. The total loss was upward of \$30,000. The company manufactured the Leader Washing Machine and other novelties.

The plant of the Watkins Wire Spring Company, at Lockport, Ill., was burned on the 14th inst., causing a loss of \$80,000. The company are the successors of the Chicago Wire and Spring Company, in operation since last April. Arrangements had just been made for the manufacture of barb wire. They were outside the Columbia Patent Company, the patent being one of Watkins'.

The Barnes Mfg. Company, New Haven, Conn., have been reorganized, and the following officers elected: C. S. Hamilton, president; A. C. Barnes, secretary and treasurer; J. H. Woolston, superintendent. Wm. H. Jacobus, 90 Chambers street, is their New York representative.

The Missouri Iron Roofing and Corrugating Company of St. Louis, Mo., are making additions and improvements to their present plant. The present works will be rebuilt and an addition 140 x 30 feet erected.

The United States Graphite Company of East Saginaw, Mich., now have their new works completed and in full operation. The company manufacture a line of graphite products and have control of the Plombogina graphite mine in Sonora, Mexico. They are now marketing plumbago lubricants of all kinds, foundry facing, floated graphite and graphite paint and plumbago cement, with good success.

A new company has been formed and ground broken at Bridgeport, Conn., for a foundry for making alloys of copper with aluminum, silicon and manganese. Dr. Leonard Waldo, formerly connected with the Aluminum Brass and Bronze Company of Bridgeport, and N. E. Stout of New York, are at the head of the new enterprise.

Haberman's tin factory, at Laurel Hill, L. I., N. Y., has been destroyed by fire, at a loss of \$75,000.

The Somerset Potters Works Company of Somerset, Mass., have recently changed the style of their firm to a corporation and will hereafter be known as the Somerset and Johnsonburg Mfg. Company, with works in Somerset, Mass., and Johnsonburg, Pa. The firm will engage in the manufacture of fire brick, blocks, tile, enameled brick and building and vitrified paving brick, with a capacity of 35,000,000 annually. It is stated that the new company have acquired the patents of Wm. Johnson of Leeds, England, who is one of the firm and also its consulting engineer. These patents consist of brick-making machinery, kiln for burning brick. The firm have opened an office in the Lewis Block, Pittsburgh, in charge of C. C. Lane, lately identified with the Mt. Savage and West Virginia Fire Brick Company.

The American Tube and Iron Company, at Youngstown, Ohio, will enlarge their plant by the erection of a mill for the production of small pipe.

## TRADE REPORT.

### Chicago.

(By Telegraph.)

Office of The Iron Age, 50 Dearborn street, }  
CHICAGO, December 23, 1891.

All influences now tend toward a better condition of business. Everything points to a year of great activity. The railroads are purchasing heavily in almost every line of supplies, and the better class of consumers are beginning to follow their example. Inquiries are increasing, evidently being stimulated to a great extent by the encouraging news now being printed from day to day. The item of Eastern freight shipments, for instance, is very significant. Last week the east-bound roads carried from this city over 120,000 tons, which is the heaviest business ever done, and over 50 per cent. greater than the corresponding week last year. Prices are still at their lowest, as production is so heavy that the demand will have to be considerably increased to affect values.

**Pig Iron.**—A fair business is in progress in local Coke Iron, but it is largely in renewals of old contracts now about expiring. Buyers are pretty well convinced that prices are not likely to go lower, but on the contrary may go higher, and they are not waiting for January to come, knowing that they will need the Iron. Manufacturers find it impossible to advance prices, as sellers are too numerous. There is perhaps satisfaction enough for the present in finding the demand better than it was expected to be. Southern Coke Iron is weak, owing to the offers at low prices by furnace companies obliged to raise money. Such bargains are, however, for immediate shipment, and this does not suit the great majority of consumers, who desire monthly deliveries covering a considerable period. Hence regular prices are less affected by this unsatisfactory state of affairs than would at first be supposed. Inquiries for Southern Coke Iron are large, and quite a number of important deals are hanging that are liable to be closed at any day. Lake Superior Charcoal is in some demand, with sales of fair quantities. Makers are generally asking \$17 now, the sellers at lower prices gradually becoming fewer. Quotations are as follows, f.o.b. Chicago:

Lake Superior Charcoal.....	\$16.75 @ \$17.25
Local Coke Foundry, No. 1.....	15.50 @ 16.00
Local Coke Foundry, No. 2.....	14.50 @ 15.00
Local Coke Foundry, No. 3.....	14.00 @ 14.50
Local Scotch.....	16.00 @ 16.50
Ohio Strong Softeners.....	17.75 @ 18.25
Southern Coke, No. 1.....	15.50 @ 16.00
Southern Coke, No. 2.....	14.75 @ 15.00
Southern Coke, No. 3.....	14.00 @ 14.25
Southern, No. 1, Soft.....	14.75 @ 15.00
Southern, No. 2, Soft.....	14.00 @ 14.25
Southern Gray Forge.....	13.75 @ 14.00
Southern Mottled.....	13.25 @ 13.50
Tennessee Charcoal, No. 1.....	17.50 @ 18.00
Alabama Car Wheel.....	19.50 @ 20.50
Coke Bessemer.....	16.50 @ 17.00
Hocking Valley, No. 1.....	17.25 @ 18.50
Jackson County Silvery.....	17.50 @ 18.00

**Spiegeleisen.**—Is still selling moderately well, but in carload lots only and at unchanged prices.

**Bar Iron.**—Manufacturers appear to be working into better condition very rapidly. Mills which were hungry for work but a month back now are quite independent. Some agents report the past two weeks the best in tonnage of orders received that they have known for some months. Consumers are in numerous instances endeavoring to buy at present prices to cover their wants for the first half of '92, but sellers are not disposed to meet their views. Prices still range from 1.65¢ to 1.70¢, half extras, Chicago, but with only a few sellers at the inside rate.

**Sheets.**—Mill agents report an unusually heavy demand from roofing concerns

and other manufacturing consumers. Some mills are known to be filled up now to next June. The price of No. 27 Common is 2.90¢ @ 2.95¢, Chicago, for immediate shipment, but some makers are trying to get more, believing that the market will warrant an advance very shortly if it does not now. The demand for Galvanized Iron keeps up. Mills are still beyond their orders and new concerns have already been forced to run double turn, although hardly prepared for it. Jobbers quote No. 27 Common 3.10¢ @ 3.20¢ and Juniata Galvanized 60 and 10 % off.

**Merchant Steel.**—The railroads are buying Tool Steel quite liberally for January delivery, their orders running largely to special Steel. Ordinary Tool Steel is again under a cloud, excessive competition for orders being the cause.

**Other Finished Iron and Steel.**—Structural material is unchanged, but the business assured for next year constantly grows in volume. Plates are in better inquiry, but prices are no stronger.

**Track Supplies.**—Manufacturers of Steel Rails are now debating the wisdom of selling much more of their output in advance. If next year proves to be as prosperous as it now promises there will be a very active demand for Rails in the spring and summer months and the mills prepared to make prompt deliveries in those months will be able to get an advanced price. It is possible that buyers will do better who place their order for winter or early spring delivery than those who take their chances later. As far as can be ascertained, the business of the past week was light. Quotations range from \$31 upward, according to quantity, &c. Large Splice-Bar orders have again been placed at close to 1.80¢ for Iron and Steel. Spikes are still held at 2.20¢ @ 2.25¢, and Track Bolts with Hexagon Nuts at 2.70¢ @ 2.75¢.

**Old Rails and Wheels.**—A sale of 1000 tons of Old Iron Rails was made at \$21.75, but this is above the views of most buyers, who quote the market at about \$21.50. There is but little demand from consumers, while stocks are plentiful. Old Steel Rails are quiet, being nominally worth \$14 @ \$14.50. Old Car Wheels are in good demand, one dealer having sold lots aggregating 1000 tons the past week at \$15.75 @ \$16.

**Scrap.**—While there has been no general buying movement, the market is showing some signs of life. Consumers are taking hold again and large transactions may be expected at any day. Selling prices are as follows, per net ton: No. 1 Railroad, \$18; No. 1 Forge, \$17.50; Horse Shoes, \$18; Car Axles, \$22; Fish Plates, \$20; No. 1 Mill, \$12.50; Pipes, \$11.50; Sheet Iron, \$8; Cast Borings, \$7; Wrought Turnings, \$10; Axle Turnings, \$12; Machinery Cast, \$12; Malleable Cast, \$9; Stove Plate, \$9; Mixed Steel, per gross ton, \$11.75; Coil Steel, \$15.50; Leaf Steel, \$17.75.

**Metals.**—Quite a quantity of Copper is being sold at the low price now going. Lake Copper is still quoted in carload lots at 10½¢ and casting brands 10¼¢. Spelter is unchanged, 4.50¢. As to Pig Lead, Everett & Post report that the inquiry for futures is good; but they learn of but one transaction, and there is no more January Lead for sale that they hear of. The market has ruled very quiet but firm at 4¢ @ 4.05¢ asked. Sales will amount to 350 tons at these figures, which represent the market at the close.

The locomotive builders have agreed what constitutes extras and have established prices on them.



Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., December 22, 1891.

Business begins to indicate a gradual winding up for the year. Buyers of large lots are still to be met with, proving prices are made low enough, but the small operators seem to have bought all they intend to until they have taken account of stock and seen what the result of the year's business has been. With this fact in mind, and with the additional fact of an enormous output of Pig Iron, it is surprising that prices are so steady. Feverishness there is, but weakness there is not. It is just possible that there may yet be another dip in prices, but it is more likely that there may be a move in the opposite direction, and as neither side intend to be left if they can avoid it, the feeling is naturally feverish and unsettled. So far as anything absolutely definite is concerned, no one seems bold enough to take any immediate position, beyond duplicating purchases at prices recently ruling. Buyers won't consider for a moment anything that involves an advance, and with but few exceptions sellers are just as determined not to submit to a reduction. Those who are at the old figures, as well as those who have quoted slight advances, refuse to concede anything, so that the market is in total abeyance pending further developments. Under such circumstances it is no easy matter to say what the outcome will be. Ultimately it will undoubtedly be for higher prices, but whether that is to be immediately or at some later date will depend to a very great extent on the amount of new business that will be offered within the next 30 days. Prospects are as satisfactory as could be desired, but it is simply a question of how long it will be before these prospects become actual work in hand. Money is easy, prices are low, and work needs to be done in every direction. The thing is to get it started.

**Pig Iron.**—A very heavy business has been done during the past week, mostly, however, in low-priced Irons. In saying this, it is not to be understood as Iron at lower prices, but simply low-priced Irons at such prices as \$13.75 @ \$14.75, deliveries beginning at such points as Baltimore, York, Harrisburg, and so on, to points across the Delaware River, prices varying according to freight rates. Higher grades have sold at relatively equal prices; so that taking the market all the way through it is not weak by any means, while at the low figures recently ruling it may fairly be called steady to strong. As we have remarked before, it is almost impossible to quote exact prices in times like these, when there are so many brands and so many different deliveries, but a careful reader can get near enough to approximate very closely. The way some concerns juggle with the grading is a little misleading, but all the same there are firm prices to good and established brands, which, during the week, have been sold about as follows, varying according to quality, point of delivery, &c.:

Ohio Softeners, No. 1x.....	\$18.00	@	\$18.50
Ohio Softeners, No. 2x.....	17.00	@	17.50
Standard Penna. No. 1x.....	17.50	@	18.00
Standard Penna. No. 2x.....	16.00	@	16.50
Medium Penna. No. 1x.....	17.00	@	17.25
Medium Penna. No. 2x.....	15.75	@	16.00
Plain No. 2 Southern.....	14.50	@	15.00
Virginia, No. 1x.....	16.25	@	17.00
Virginia, No. 2x.....	15.25	@	15.75
Standard Neutral All-Ore Forge	14.25	@	15.00
Ordinary Forge Cinder mixed ..	13.50	@	14.00
Hot-Blast Charcoal.....	20.00	@	22.00
Cold-Blast Charcoal.....	24.00	@	27.00

**Steel Materials.**—There is more inquiry for Bessemer Pig, and a decidedly better demand for low-phosphorus Irons. Probably \$16.50 at furnace would be quoted for Bessemer, and \$18 @ \$19 for

low phosphorus, with several sales of the latter, chiefly at the medium quotation.

**Steel Slabs and Billets**—The market has been very quiet during the past week, and only one or two small lots are reported as taken. Manufacturers are firm at advanced prices, and claim that \$26.50 at seaboard or near-by points would be their bottom figure. Consumers are pretty well supplied for the present, however, so that the market may perhaps be a little one sided, but it is hard to tell until it is tested by actual bids. In one or two instances orders for 500 ton lots have been refused at a price equal to \$26.35, seaboard, so that on the whole, and for the present, appearances are a little in sellers' favor, and it is probably safe to call the market steady and firm at an advance of from 25¢ to 40¢ @ ton.

**Steel Rails.**—Not very much new business to report, and no individual transactions of more than 3000 to 4000 tons each. There is a good inquiry, however, and prospects are very favorable, although in the meantime large orders are not available to any great extent. Prices remain at \$30, f.o.b. cars at mills, and, it is believed, with no possible chance of a concession.

**Muck Bars.**—Market extremely dull and prices more or less nominal. For spot cash a few small lots have been offered at about \$25.25, at sellers' mills, but in most cases \$25.75 @ \$26.25 are considered inside figures, especially for deliveries extending beyond next month.

**Bar Iron.**—Demand has been fairly active of late and some of the mills have filled up nicely for the next three or four weeks. Prices are probably a shade better, although it is no easy matter to get more than 1.70¢ for city deliveries or 1.60¢ @ 1.65¢ at interior points, but there is a better feeling and one which would quickly respond to any further increase in the demand. Something of this kind is generally expected, as the majority of manufacturer are inclined to ask more money for January deliveries, or, at all events, to postpone the acceptance of business at the low figures recently ruling.

**Plates.**—The demand is moderately active for small and medium-sized lots, with a fair number of inquiries for deliveries during the coming month. Prices are as irregular as usual, but are expected to stiffen as soon as the demand becomes as active as may be reasonably hoped for. There will be comparatively little work done during the balance of the month, and in some cases the suspension will be more protracted than usual, unless better prices can be had. Meanwhile prices are nominally as follows, but on desirable specifications liberal concessions have been allowed, and to-day probably the lowest figures of the year have been quoted for several hundred tons of common Plates:

	Iron.	Steel.
Tank Plates.....	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined.....	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell.....	2.30 @ 2.40¢	2.25 @ 2.35¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

**Shapes.**—A little more demand is reported, but not in very large lots. Inquiries denote the probability of more activity in the near future, however, although in the meanwhile prices are very irregular, but are nominally about as follows: Angles, 1.95¢ @ 2.05¢; Universal Plates, 2¢ @ 2.10¢; Sheared Plates, 1.90¢ @ 2¢, and in some cases lower prices, to about 1½¢ more, for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

**Sheet Iron.**—A very fair business has been done during the past week, mostly in lots for quick delivery, pending the usual suspension of work during the holi-

days. Prices are steady, and for the best makes about as follows:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @ 3.15¢
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @ .....
Best Refined, No. 28.....	3.50¢ @ .....
Common, ¼¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about 1½¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24.....	3¼¢ @ .....
Best Soft Steel, Nos. 25 to 26.....	3½¢ @ .....
Best Soft Steel, Nos. 27 to 28.....	4¢ @ .....
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	@ 67½¢
Common, discount.....	@ 70 ¢

**Old Material.**—A little better demand is reported, and as a rule at unchanged prices. Under forced sales extremely low figures have been accepted; in one case a lot of Old Iron Rails with which the collapsed firm of Field, Lindley & Co. of New York were said to be connected, was sold at a price very much less than would be ordinarily supposed—but they had to be sold at some price, and it is not every one that wants Old Rails these days. General quotations are about as follows: Iron Rails, \$21.50 to \$22 asked; Steel Rails, \$16 @ \$17, delivered; No. 1 Railroad Scrap, \$20.50 @ \$21, Philadelphia, or for deliveries at mills in the interior \$20.50 @ \$21.50, according to distance and quality; \$14.50 @ \$15.50 for No. 2 Light; \$14 @ \$14.50 for best Machinery Scrap; \$13.50 @ \$14 for ordinary; \$14.50 @ \$15.50 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$23 @ \$25 for Old Fish Plates, and \$16 @ \$16.50, delivered, for Old Car Wheels.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, December 23, 1891.

**Pig Iron.**—If there has been any change in the Iron trade during the week it has been in the direction of weakness, there being more willingness, not to say urgency, to sell. There are rumors of lower prices being accepted than can be authenticated, and they are probably apocryphal. There have been sales of 500 tons Gray Forge at \$9.50 and No. 3 Foundry at \$10 at the furnace for delivery the next two or three months. Buyers claim that they can purchase at these rates for the first half of next year, and that the only reason the sales are not large is the want of buyers. There is not much buying of Charcoal Iron, although there is liberal consumption in progress, for consumers are running upon stock on hand or previous contracts. The fact, if it be a fact, that the car works have not for years been so full of orders, and the prospect that more will be placed, is encouraging, but some one has been unkind enough to say that the market has for months been buoyed up by such anticipations and that when increased buying of Charcoal Iron begins there will be something more tangible upon which to base better prices. There is a fair volume of consumptive orders for Pig Iron in general, and although they are generally small the aggregate is considerable, for which fair prices are obtained. There is still complaint of a scarcity of cars to make prompt deliveries on certain lines, but in general transportation is ample. We revise quotations as follows:

Foundry.

Southern Coke, No. 1.....	\$14.75 @ \$15.00
Southern Coke, No. 2.....	13.75 @ 14.00
Southern Coke, No. 3.....	12.75 @ 13.00
Ohio Soft Stone Coal, No. 1.....	16.25 @ 16.50
Ohio Soft Stone Coal, No. 2.....	15.50 @ 16.00
Mahoning and Shenango Valley.....	17.00 @ 17.50
Hanging Rock Charcoal, No. 1.....	20.00 @ 21.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 20.00

Tennessee and Alabama Charcoal, No. 1.....	16.50 @	17.00
Tennessee and Alabama Charcoal, No. 2.....	15.50 @	16.00
Forge.		
Gray Forge .....	12.25 @	12.50
Mottled Neutral Coke.....	11.75 @	12.00
Car Wheel and Malleable Irons.		
Standard Southern Car Wheel....	19.25 @	19.50
Lake Superior Car Wheel and Malleable.....	18.25 @	18.50

The Columbus and Hocking Coal and Iron Company of Columbus, Ohio, announce that they have appointed Chamberlain, Turney & Co. of Columbus exclusive selling agents for their different brands of iron, the Pencost, Bessie, Winona and Akron.

### New York.

Office of The Iron Age, 96-102 Reade street, New York, December 22, 1891.

**American Pig.**—Some Southern sellers have again become urgent, but have been pressing the market more particularly on the lower grades, which are not largely taken in this section. At Birmingham, Ala., large blocks of Gray Forge have been sold on the basis of \$9.50. We quote Northern brands, \$16.75 @ \$18 for No. 1; \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Iron sells at \$16 @ \$17 for No. 1; \$15.25 @ \$16 for No. 2, and \$13.75 @ \$14.50 for Gray Forge.

**Spiegeleisen and Ferromanganese.**—The market has been very dull. Foreign 80 % Ferro is quoted \$62 @ \$62.50, tide-water, while Spiegeleisen is nominally \$26.75 @ \$27.

**Billets and Rods.**—Little business is reported in domestic Billets by sellers in this market. Considerable interest is taken in the outcome of the meetings among Soft Steel makers being held in Pittsburgh. It is understood that the first meeting last week was attended only by a few producers, and that some makers declined to take part, but there was a free interchange of opinion, which led to the conviction that prices have been crowded altogether too low. It is reported that there has already been a stiffening in the West, which has been reflected by slightly higher prices in the East. It is pretty well known now that the low prices for Soft Steel brought out a good many buyers, notably in the West, and that in the aggregate a very heavy amount of business has been booked for the first quarter of next year. In Foreign Billets we may note that there have been offerings at \$30.75. Wire Rods are dull in the East at \$36.50 @ \$37, tide-water, while a heavy business is reported from the West at an advance above the lowest prices reached. The Western trade was particularly demoralized by the expectation that the large mills building would become sellers at an early date. It turns out now that in one case they did not care to meet the market, and that, in another, there had been delay in completing the machinery.

**Steel Rails.**—Eastern makers of Steel Rails report little new business, and are at the present time more keenly interested in the Light Rail trade, in which there is close competition and some irregularity. Some of the Western mills do not make the differences in the different sections which Eastern mills adhere to fairly well. Other works crowd the market on the very light sections. In the Pittsburgh district there has been quite a lively demand lately for Mine Rails, due to the resumption of work in the mines of that section, which has followed the exhaustion of natural gas.

**Manufactured Iron and Steel.**—The principal item of interest is that another

round order for Beams has gone abroad. For the first three tiers of the building in question there was not time to wait for Foreign Beams, so that 300 tons were placed with a neighboring mill; the balance of the requirement, 700 tons, will be foreign. Plates are still selling at low figures and Bars are being offered at close figures. We quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.40¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.9¢ @ 2.1¢ for Tank; 2.15¢ @ 2.30¢ for Shell; 2.40¢ @ 2.65¢ for Flange; 2.60¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2¢ @ 2.20¢, delivered. Steel Axles, 2¢ @ 2.2¢, and Links and Pins, 2.1¢ @ 2.20¢; Steel Hoops, 1.95¢ @ 2.05¢, delivered.

**Merchant Steel.**—We quote Hot-Rolled Shafting 1.95¢ @ 2.10¢; Machinery, 2.05 @ 2.15¢; Tire, 2.10¢ @ 2.25¢, and Toe Calk, 2.15¢ @ 2.25¢, delivered.

**Old Material.**—The market is lifeless at \$21 @ \$21.25, Jersey City, for Old Rails, and \$19 @ \$19.25, Jersey City, for No. 1 Wrought Scrap.

**Warrant Stocks.**—The American Pig-Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard, December 1, 1891.....	45,200
Put in yard for 30 days ending December 20, 1891.....	5,500
Total.....	50,700
Withdrawn 30 days ending December 20, 1891.....	1,000
Net stock in yard, December 20, 1891....	49,700

The National Association of Galvanized Sheet-Iron Manufacturers, of which Henry Whiteley of Philadelphia is secretary, has adopted a new price-list, which will go into effect in January, which we print below:

Gauge.	No.	Weight per sq. ft. Oz.	
10	.....	..	} .....12¢ 7/8 lb.
11	.....	..	
12	.....	..	
13	.....	..	
14	.....	54	} .....13¢ 7/8 lb.
15	.....	48	
16	.....	43	
17	.....	38	
18	.....	33	} .....14¢ 7/8 lb.
19	.....	30	
20	.....	28	
21	.....	24	
22	.....	21	} .....15¢ 7/8 lb.
23	.....	19	
24	.....	17	
25	.....	16	
26	.....	15	} .....16¢ 7/8 lb.
27	.....	14	
28	.....	13	
29	.....	12	
30	.....	11	} .....20¢ 7/8 lb.

Additional prices on extra sizes on No. 19 and lighter areas follows:

Extra Widths.	Per pound.
Less than 24 inches in width.....	1¢
Over 24 inches to 36 inches inclusive....	1¢
Longer than 120 inches.....	1¢

For sizes wider than 36 inches special quotations will be furnished on application. One-half cent 7/8 lb additional for pattern Sheets—i. e., for all Iron of which every Sheet in each bundle is required to be of exact length specified, or where Iron is ordered in Sheets all of which are required to be of the same length. But Iron of any length, in bundles, in which one or two Sheets of the same number and width, but shorter than the full length ordered, are allowed to be put up in each bundle, will be considered ordinary length, or Merchant Iron, and will not be subject to any extra for length.

The price-list which has been superseded was 12¢ on Nos. 14 to 20, 13¢ on Nos. 21

to 24, 14¢ on Nos. 25 and 26, 15¢ on No. 27 and 16¢ on No. 28.

Carnegie, Phipps & Co. have sent out a leaflet giving the dimensions of Steel Z Bar Columns, together with the safe loads in net tons for different lengths. They add also a table of safe loads and deflections for Steel Beams under uniformly distributed loads. They announce that they are prepared to furnish promptly 24-inch Steel Beams, 80 to 100 lb per foot.

### Financial.

Compared with one year ago the outlook is extremely hopeful. Business conditions seem to have been exactly reversed. Instead of depression, stringent money, scant railroad earnings, large gold shipments, derangement caused by a new tariff, and other causes of discontent, the New York banks are now able to report a surplus reserve exceeding \$19,000,000, a condition of strength rarely equaled; excellent crops burden the railroads beyond their ability to transport and earnings are correspondingly increased; wheat is going out of the country at the rate of 5,000,000 or 6,000,000 bushels a week and early in the new year an enormous corn crop will be coming forward, much of it available for export. Besides, there is no end of cotton. Last week's east-bound shipments from Chicago aggregated 120,000 tons, against 80,000 tons for the corresponding week in 1890. The enormous volume of the grain movement is further indicated by the fact that at last advices no less than 125 miles of track at Chicago were filled with loaded cars, and that the Burlington road alone had 2200 cars waiting to discharge. The effects are already seen in the receipts of gold from Europe, amounting to \$28,000,000 since the return movement commenced, early in September. A confident belief prevails that imports will soon be resumed in considerable volume. A dinner given at Delmonico's by the New York Commissioners of the National Columbian Exposition, Chauncey M. Depew, John Boyd Fletcher and Gordon W. Allen, assisted by J. Seaver Page, gave evidence of New York's intention to do what it can to make the exposition a success.

The stock market was dull but firm. The chief support was derived from the excellent report of railroad earnings, which improve from month to month, due to the large crop movement and continued stability of rates of freight. Railroad management, too, has been economical. The gain in earnings for ten months is 6.48 %, compared with only 4 % for the same time last year. The bond market is almost as active, relatively, as that for stocks. As the close the coal stocks were heavy, owing to reports of dullness in the coal trade. American securities were more in favor in London.

United States bonds were quoted as follows:

U. S. 4 1/2%, 1891, extended.....	100
U. S. 4 1/2%, 1907, registered.....	116 1/4
U. S. 4 1/2%, 1907, coupon.....	117 1/4
U. S. currency 6s. ....	108 3/4

The weekly bank statement shows a net gain of \$3,822,000 in reserve, which brings the surplus up to \$19,161,500, the largest sum held since August 1 last. This time last year it was \$4,498,900. The statement shows an expansion in loans of \$4,845,100 and an increase in deposits of \$9,852,800. Loans are only \$422,000,000, while deposits are \$446,500,000. The highest point the deposits of the banks ever reached until now was early in July, 1889, when they stood at \$445,750,000.

The market for commercial paper was active, with a good demand and a little better supply of first-class names. Quota-



tions are  $4\frac{1}{2}\%$  for 60 to 90 days' indorsed bills receivable. Time contracts on prime collateral are 4 to  $4\frac{1}{2}\%$  for 30 to 90 days and 5% for longer dates. In Chicago there is no pressure for money. Rates indicate a healthful condition of trade. The future of money is supposed to depend on the movement of grain.

Bar silver closed in London at 43 $\frac{1}{2}$ d. 3 ounce. The commercial price of bar silver in New York was 93 $\frac{1}{2}$ ¢ 3 ounce.

The merchandise markets are quiet, with few important changes. Wheat is  $\frac{1}{8}$ ¢ @  $\frac{1}{4}$ ¢ bushel lower than a week ago, corn is  $2\frac{1}{2}$ ¢ lower for December and January delivery, and cotton is an average of 15 points, or  $1\frac{1}{2}$ ¢ lb. lower. The total exports of wheat and flour from the seven Atlantic ports since September 1 have been equal to 65,702,156 bushels of wheat, against 16,655,386 bushels in the same time last year, and the exports of breadstuffs during five months to November 30 are valued at no less than \$125,000,000, an increase of \$81,000,000 compared with the same time last year. In the dry goods market the leading brands of manufactured cottons were reduced.

## Coal Market.

In the Anthracite trade the same conditions prevail that were noted a week ago, the market being supplied in excess, at the lowest prices. The free production and resulting congestion in all trade channels is more distinctly felt now that the Western demand is checked by the close of navigation. Production for the week ending December 12 was 842,478 tons, compared with 704,194 tons in the corresponding week last year, an increase of 138,284 tons. The total amount of Anthracite mined thus far in the year 1891 was 38,352,037 tons, compared with 34,174,160 tons for the same period last year, an increase of 4,177,877 tons.

Philadelphia papers give no support to rumors of a threatened Coal war. But the *Record* says: "Such a war could not injure the Reading, as its capacity for production is so great that it could flood the country with Coal at prices below cost to its competitors and yet make a handsome profit on account of the increased tonnage. There is every prospect for an amicable outcome of the Anthracite allotments for the coming year." And the *Press* adds: "The stories of a Coal war which were put out by the Jersey Central people were revived again, but they have lost their effect. Nobody in the Coal trade in this section believes there will be war, and the least equipped company in the trade for a fight is the Jersey Central. If that company is to continue dividends, it don't want to bring about a contest among the Coal companies."

The Pennsylvania Railroad Company report for the week 299,000 tons, and for the year 12,945,000 tons, an increase of 1,694,000 tons. Reading's shipments were 260,000 tons, of which 20,000 were sent to New York.

The principal creditors of the recently insolvent firm of Hadfield & Co. of Milwaukee are: Lehigh Valley Coal Company, \$115,691; Philadelphia Coal and Iron Company, \$80,730; Sunday Creek Coal Company, Chicago, \$61,577; Whittall & Kemmerer, New York, \$47,725; William Peters, New York, \$26,543; G. H. Howard & Co., Buffalo, \$49,116.

A dispatch from Pittsburgh says that the Pennsylvania Company have secured control of the Pittsburgh, Chartiers and Youghiogheny Railroad, a line only 15 miles long, but which taps 30,000 acres of the richest Coal lands in that section. The road runs from Beechmont to Chartiers, and will be connected with the Pennsylvania lines by the Ohio connecting bridge. The capital stock is \$593,000.

## Metal Market.

**Copper.**—There is some evidence of a turn for the better in the temper of the market for this metal, but whether the change is merely superficial or possessed of enduring qualities remains to be seen. In any event it is a matter of record that the improvement has the support of a very fair amount of new business and numerous inquiries from consumers for 30 to 60 days' supply at prices at which there seemed to be very little chance of doing any business a week ago. A few purchases at 10 $\frac{1}{4}$ ¢ @ 10 $\frac{3}{4}$ ¢ appear to have cleaned up the cheap lots of Lake Superior Ingot, temporarily at least. Bids of 10 $\frac{1}{4}$ ¢ are now freely made, in some instances for good-sized lots. At 10 $\frac{1}{4}$ ¢ a number of sales have been made, which price seems to be the lowest that any of the mining companies will now accept for either prompt or future deliveries. In casting brands there is not enough business passing to fairly establish market values, but the surface indications are that 10¢ would be shaded very little, if at all.

**Pig Tin.**—Speculative trading has been on a very moderate scale, and purchases by jobbers and consumers do not appear to have involved a greater quantity of the metal than is usually taken at this dull season of the year. In short, the market has been flat throughout the week, with no new feature apart from a decline of about 10¢ 100 lb in price, due chiefly to a fall of 15¢ @ 17/8 ¢ ton in the London market. Speculative obligations that fell due this month have been pretty much all evened up without causing the slightest commotion, and the present position of supplies differs in no marked degree from that of a week ago. The lowest price touched was 19.80¢, net cash, 10 tons going at that. On regular terms business was done at 19.85¢ for 5 ton lots, which is relatively as low, and ordinary jobbing parcels went at 20¢, cash, 20.10¢ @ 20.15¢, 30 days.

**Pig Lead.**—Although displaying no marked activity the demand has been somewhat more animated during the last half of the week under review, and the market is rather firmer in tone, without, however, any positive change in price. Bids of 4 $\frac{1}{4}$ ¢ were accepted in remote instances, but the bulk of business has been at 4.30¢, which price fairly reflected market value for round lots at the close.

**Spelter.**—The demand does not appear to improve in the slightest degree, and individual transactions involving more than a single carload are still the exception. The offering is free, with urgency noted in some few instances, and the tone of the market is weak, with 4.70¢ @ 4.75¢ quoted for Western.

**Antimony.**—There is little business passing at the moment and prices are without radical change. Hallett's is quoted at 12 $\frac{1}{2}$ ¢, LX at 14 $\frac{1}{2}$ ¢ @ 14 $\frac{3}{4}$ ¢ and Cookson's at 15¢ @ 15 $\frac{1}{4}$ ¢, in wholesale quantities.

**Tin Plates.**—Additional orders to a very fair aggregate amount for Cokes and Terns for shipment during the first three or four months of 1892 have been placed at practically last week's prices. In spot goods there has been little or nothing outside of hand to mouth trade, however, and prices remain without important change. We quote: Coke Tins—Penlan grade, IC, 14 x 20, \$5.25; J. B. grade, do., \$5.35; Bessemer do., \$5.30; Siemens Steel, \$5.45. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.70 @ \$5.75; Siemens Steel, IC basis, \$5.80 @ \$5.85; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.50; for each additional X add \$1.50; Allaway grade, \$5.80; Grange grade, \$5.90 @ \$5.95; for each additional X add \$1.10.—Charcoal Terns—Worcester, 14 x 20, \$5.75; do., 20 x 28,

\$11.50; M. F., 14 x 20, \$7.45; do., 20 x 28, \$15; Dean, 14 x 20, scarce; do., 20 x 28, \$10.60; D. R. D. grade, 14 x 20, \$5.25; do., 20 x 28, \$10.10; Mansel, 14 x 20, \$5.50; do., 20 x 28, \$10.30; Alyn, 14 x 20, \$5.50; do., 20 x 28, \$10.50; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$11.10. Wasters—S. T. P. grade, 14 x 20, \$5.10; do., 20 x 28, \$10; Abercarne grade, 14 x 20, scarce; do., 20 x 28, \$9.75.

## Cleveland.

CLEVELAND, December 21, 1891.

**Iron Ore.**—Over 75,000 tons of Ore have been forwarded to the furnaces from Lake Erie ports during the past week. Railroad agents are determined that the docks shall be well cleared up before navigation opens next season. Quite a number of furnacemen have asked for quotations during the past week, but next year's prices have not been determined upon. It is said to-day that a few Eastern furnacemen have been buying non-Bessemer for all-rail winter shipment at prices about 50¢ 3 ton above mid-summer prices. The belief is almost universal that next season's quotations will be a trifle higher than those prevailing last June and July, when the bulk of this season's output of Ore was sold. Whatever may be the sentiment regarding the opening of the market for next year, it is quite certain that nothing will be done until after the holidays.

**Pig Iron.**—Although no very great amount of business is being done, prices are somewhat firmer. Even the interruption incidental to the holidays has not prevented an improved demand, especially for Bessemer and Forge Irons. Of course little will be done for the next two or three weeks. Stocks are being looked over and inventories taken. Along about January 15 dealers look for something resembling a boom. Strictly local quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	\$18.50 @ \$19.00
Nos. 1, 2 and 3 Bessemer, per ton.	16.25 @ 16.50
No. 1 Strong Foundry, per ton.	16.20 @ 16.70
No. 2 Strong Foundry, per ton.	15.30 @ 15.70
No. 1 American Scotch, per ton.	16.20 @ 16.70
No. 2 American Scotch, per ton.	15.20 @ 15.70
No. 1 Soft Silvery, per ton.	16.50 @ 17.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton.	14.00 @ 14.25
Mahoning and Shenango Valley Red Short Mills, per ton.	14.50 @ 15.00

**Old Rails.**—Business is reported light. Old Americans are in some demand, but at figures that mean very little for sellers. Quotations are nominally \$23.50 @ \$22.75.

**Manufactured Iron.**—The demand is light, but this is believed to be incidental to the holiday season. The mills have enough to do, and it seems entirely probable that business will pick up after the holidays. Prices, however, are a bit discouraging, although they will undoubtedly improve after the holidays. Sheets are still hard to obtain even at fancy prices.

**Nails.**—The demand is rather weak and prices are not satisfactory. For the past few weeks Wire Nails have seemed to feel the depression in trade more keenly than Cut Nails, but the demand for neither product has been at all good. Steel Wire Nails are quoted at \$1.85 in stock and Steel Cut Nails at \$1.70. Manufacturers look for better business after the first of the year.

## Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date December 21, 1891, say: There is very little business, and little is to be expected until after the holidays. While the long looked for advance is not yet in sight, sellers still have hopes it will not be long delayed after the first of the new year. The fact that prices do not de-

cline under the enormous production is in itself a sign of strength and had the production remained at or near that of the summer months an advance would have surely come ere this, but furnacemen counted to certainly on its arrival and thought to anticipate it, thereby undoubtedly delaying, if not entirely preventing, its appearance. What purchasing is being done is not confined to any special grade or class of Irons, but is about equally divided between Lake Superior Charcoal, Southern Coke and Ohio Softeners. The meeting of the Waterways Convention, held here last week, has been so fully reported in the daily press that it is hardly necessary to mention it, except to note that many of the delegates were men of national reputation, and their names cannot help but add weight to the recommendations that will be made to Congress, asking for an appropriation sufficiently large to secure a deep-water channel to Buffalo, and eventually to the ocean. We report a quiet market, with no change in prices:

Lake Superior Charcoal, all numbers.....	\$17.50 @ \$18.00
Lake Superior Coke, Bessemer.....	16.50 @ 17.00
Lake Superior Coke Foundry, all ore.....	17.50 @ 18.00
Ohio Blackband (40 per cent.).....	18.00 @ 18.50
Southern No. 1.....	16.25 @ 16.50
Southern Gray Forge.....	14.00 @ 14.50
Jackson County (Ohio) Silvery.....	18.25 @ 18.75

## Pittsburgh.

Office of The Iron Age, Hamilton Building, Pittsburgh, December 22, 1891.

**Pig Iron.**—There is nothing especially important to note, with the exception that the firmness noted in our report of last week continues, and the feeling generally obtains that hard pan has certainly been reached, and there are now as many, if not more, buyers than sellers at present prices. There is no difficulty in finding buyers for delivery during the first quarter of 1892, but sellers are not so numerous. Our city furnaces are all pretty well sold up, while valley furnacemen are refusing to accept rates obtainable in this market, as they have a freight rate of 70¢ per ton, and besides they are still able to do better at home or elsewhere than here. Another strong point in favor of the belief that our market has reached the lowest point is the fact that current rates do not more than cover actual cost of production, and it is very evident that unless there is an improvement soon some of the furnaces will have to blow out. A good many consumers have arrived at the conclusion that there is not much risk in buying at present prices, and some of them are anxious to contract for future delivery. Bessemer Iron appears to be stronger just now than any other kind, as there is more inquiry for it, but there is not much doubt but that Gray Forge will soon sympathize. The foundry trade is very dull, as it always is just at the close of the year. We quote prices as follows:

Neutral Gray Forge.....	\$13.50 @ \$13.65, cash
White and Mottled.....	12.50 @ 13.00, "
Al-Ore Mill.....	14.00 @ 14.50, "
No. 1 Foundry.....	15.50 @ 16.00, "
No. 2 Foundry.....	14.50 @ 15.00, "
No. 3 Foundry.....	14.00 @ 14.25, "
No. 2 Charcoal Foundry.....	21.00 @ 21.50, "
Cold-Blast Charcoal.....	25.00 @ 27.00, "
Bessemer Iron.....	15.25 @ 15.50, "

It may be stated that while there have been no sales of Bessemer Iron reported above \$15.25, cash, some furnacemen are now refusing to sell at that price, and there are not many sellers of well known brands of Forge Iron at the inside quotation, \$13.50. Pig Iron never sold so low in Pittsburgh as at the present time.

**Muck Bar.**—The dullness noted for some weeks past continues and there does not appear to be much prospect of any immediate improvement. It is being offered freely and might be bought for from 25¢ to 50¢ per ton less.

**Manufactured Iron.**—Contrary to general expectations, there have been good-sized orders on the market the past week, chiefly from car builders who have closed some large contracts for cars. The outlook is very generally regarded as being favorable for a good trade early in the new year and some manufacturers are disposed to keep themselves in a position to take advantage of the improvement. In addition to a big demand, directly as well as indirectly, from the railroads it is confidently expected that the requirements for other purposes will considerably exceed those of the present year. There is only one thing apprehended and that is labor complications. We repeat former quotations, which are very low: City-made Bars, 1.67½¢ @ 1.70¢; Plate and Tank, 1.85¢ @ 2¢; No. 24 Sheet, 2.60¢, all 60 days, 2 % off for cash. Skelp Iron very dull, 1.60¢ @ 1.65¢ for Grooved and 1.85¢ @ 1.90¢ for Sheared, four months, 2 % off for cash.

**Nails.**—Prices remain as quoted in our last report. Steel Cut Nails, \$1.55 @ \$1.60 for 30¢ to 35¢ average, f.o.b. at factory, 60 days, 2 % off for cash. In the Wheeling district Wire Nails are still quotable at \$1.65 @ \$1.70, 2 % off for cash, although some manufacturers refuse to sell below \$1.75. It is asserted, but we cannot vouch for its correctness, that the chief object in keeping prices so low is to force some manufacturers who thus far have refused to enter a syndicate to join in with the rest.

**Wrought-Iron Pipe.**—There is no improvement to note, and it is not expected that there will be for some weeks to come, or until the spring trade opens up. But few of the mills are working up to anything like their full capacity, and some of them are accumulating stock. Very few large orders are on the market at present; indeed, there are not many of any kind. The syndicate prices remain unchanged, but, as stated in our last report, they are not being adhered to; indeed, it is in reality an open market for the present, and each manufacturer is making his own prices.

**Old Rails.**—The demand for Old Iron Rails continues light and chiefly from the Shenango and Mahoning valley districts. We are advised of sales of 1500 tons at \$22.75, cash, which for the time may be regarded as the ruling price. Old Steel Rails may be quoted at \$16.75 @ \$17 for short and \$17.50 @ \$18 for long pieces.

**Billets and Slabs.**—The firmness which has characterized the market for the past ten days continues, and at the low price of two weeks ago there would be no difficulty in getting business. We continue to quote \$24 @ \$24.50, cash, at makers' mill, according to character of order, delivery, &c. It is reported that a secret meeting of manufacturers of this and the Wheeling district was held one day last week, at which an understanding was arrived at.

**Barb Wire.**—There has been no recent change in prices. Painted, \$2.45; Galvanized, \$2.95, f.o.b. at factory in the Pittsburgh and Wheeling districts. Business is reported light.

**Structural Material.**—There is not much new business offering at present, but it is expected that there will be early in the new year. Prices remain unchanged. Beams and Channels, 3.10¢; Angles, 1.90¢ @ 2¢; Tees, 2.40¢ @ 2.50¢ Universal Mill Plates, Iron, 1.95¢ @ 2¢; Sheared Bridge Plates, 2¢ @ 2.10¢; Refined Bars, 1.75¢ @ 1.85¢.

**Steel Plates.**—Not much new business reported, but the mills continue to have about all they can do working up old contracts. Prices remain unchanged, as follows: Fire Box, 3.50¢ @ 4.25¢; Tank, 1.85¢ @ 2.05¢; Shell, 2¢ @ 2.20¢; Flange, 2.25¢ @ 2.40¢.

**Railway Track Supplies.**—There is a continued good demand and prices are firm as quoted: Spikes, 2.15¢, 30 days, f.o.b. at makers' mill; Splice Bars, 1.70¢ @ 1.80¢; Track Bolts, 2.65¢ with Square and 2.75¢ with Hexagon Nuts.

**Merchant Steel.**—There is nothing new to report in this line. Business only fair, while prices remain unchanged. Crucible Tool Steel, 6½¢ @ 7¢; do. Spring, 4¢; do. Machinery, 4½¢ @ 5¢; Bessemer Machinery, 2.10¢ @ 2.20¢; do. Toe Calk, 2.10 @ 2.20¢; Tire Steel, 2.10¢ @ 2.20¢; Steel Bars, 1.80¢ @ 1.85¢.

**Old Material.**—The demand for nearly all kinds of Old Material continues light, while prices remain as quoted a week ago.

## St. Louis.

(By Telegraph.)

**Metals.**—In Pig Lead the market has not changed much during the past week. Offerings are limited at 4¢, with bids of 3.97½¢. There is a degree of apathy which is no doubt influenced by the holidays, and no change is anticipated until after the turn of the year. Spelter shows no change whatever. A number of orders have been accepted during the past week for delivery during the first three months of next year at prices ranging from 4.40¢ to 4.45¢; prompt shipments command 4.50¢.

## British Iron and Metal Markets.

(Special Cable Dispatch to The Iron Age.)

LONDON, WEDNESDAY, December 23, 1891.

Scotch warrants have receded to 47/ on sales of a few small lots and the market is still flat. Cleveland warrants have advanced to 38/3, however, and Hematite to 49/, with a very fair business done, chiefly in the form of purchases against late short sales. Stocks in warrant stores now amount to 500,000 tons Scotch and 154,000 tons Cleveland.

Tin Plate found brisk sale early in the week, but the market has since become quiet. High grade Terns met with very fair demand, and several makers are now booked three months' ahead on that class of product. Bessemer Cokes of odd sizes were the most active, however, and a number of forward contracts were secured at 12/6, at Wales, against 12/2 for ordinary 14 x 20. Charcoals are virtually neglected.

Pig Tin advanced to £91 for prompts early in the week, but subsequently receded £1, despite moderate Straits shipments, under the influence of free sales of foreign owned metal. At the decline there was a fair amount of quiet buying.

Copper has been steadier, and Merchant Bar prompts sold up to £45. 10/ under the influence of better purchases by consumers and freer speculative buying of futures. Some holders have realized on the advance, but the market has the support of leading firms. Recent sales of furnace material include 2350 tons Montana Matte at 9/ (an advance of 3d.) and 500 tons ditto on private terms.

**Cleveland Pig.**—Although not as strong as warrants, makers' Iron is firmer and has



had better sale. Makers' price is now 38/ for No. 3 Middlesborough, f.o.b.

**Scotch Pig Iron.**—The movement in makers' Iron continues slow, and prices are barely holding their own.

No. 1 Coltness, f.o.b. Glasgow.....	55/6
No. 1 Summerlee, " " " " " "	54/
No. 1 Gartsherrie, " " " " " "	54/
No. 1 Langloan, " " " " " "	55/
No. 1 Cambro, " " " " " "	48/6
No. 1 Shotts, " " at Leith " " " "	57/
No. 1 Glengarnock, " Ardrossan " " " "	55/6
No. 1 Dalmellington, " " " " " "	49/6
No. 1 Eglinton, " " " " " "	40/
Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 10/.	

**Bessemer Pig.**—The market has been slow and prices are a shade easier at 48/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

**Spiegeleisen.**—Market very quiet and sellers still quoting English 20% 84/ @ 85/, f.o.b. shipping port.

**Steel Rails.**—Lack of orders has prompted lower offerings by some makers and the market is weak. Heavy sections quoted £4. and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—The market is exceedingly dull and rather weak, but makers still quote £4 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—The business passing is light, and inquiries do not increase. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—The market remains very quiet. Bessemer quoted at £4. 5/, f.o.b. at N. W. England shipping point.

**Old Iron Rails.**—Demand is running light, and prices are slightly easier. Tees quoted at £2. 17/6 @ £2. 18/3 and Double Heads £3 @ £3. 2/6, f.o.b.

**Scrap Iron.**—Prices unchanged and business moderate. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

**Crop Ends.**—Market dull and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

**Tin Plate.**—Fair business doing, but prices still irregular. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	14/3 @ 14/9
IC Bessemer Steel, Coke finish.....	12/6 @ 13/
IC Siemens " " " " " " " "	13/ @ 13/3
IC Coke, B. V. grade.....	12/3 @ 12/6
Charcoal Terne, Dean grade.....	12/3 @ 12/6

**Manufactured Iron.**—The market all through is quiet and prices are unchanged. We quote, f.o.b. Liverpool:

Staff. Ordinary Marked Bars	8 10 0 @	£ s. d.
" Common " "	6 12 6 @	0 15 0
Staff. Hk Sheet, singles.....	7 17 6 @	0 12 6
Welsh Bars (f.o.b. Wales).....	5 10 0 @	5 12 6

**Pig Tin.**—The market is firmer at £90. 10/ @ 90. 12/6 for spot and £91, three months.

**Copper.**—There is a good demand and the market closes strong. G. M. B. are £45. 15/ for spot, £45. 5/, three months, and £49. 10/, best selected.

**Lead.**—The market closes strong at £11. 5/ for best selected.

**Spelter.**—The demand is good and the market steady at £22. 10/ for ordinary Silesian.

## Imports.

### Hardware, Machinery, &c.

Blumenthal, A. & S., Mach'y, cgs., 54	
Boker, Hermann & Co., Chains, pks., 88; Arms, cs., 10	
Botany Worsted Mills, Mach'y, cs., 47	
Clark Mills Company, Mach'y, cs., 34	
Demarest & Aspe, Hardware, cs., 5	
Gorman Weaving Company, Mach'y, cs., 11	
Janne Emil, Mach'y, cs., 5	
Kennedy & Moore, Mach'y, cs., 5	
King, Hezekiah, Mdse., cs., 8	
Lau, J. H. & Co., Arms, cs., 10; do., parts, cs., 11	
Meacham Arms Company, Arms, cs., 4	
Ward, Jas. E. & Co., Mach'y, pgs., 9	
Werleemann, H., Arms, cs., 7	
Wiebusch & Hilger, Hdw., cs., 8; Anvils, 57	
Wyman, Chas. & Co., Arms, cs., 5	
Order.—Knife Machines, 5; Mach'y, cs., 34	

### Tin and Terne.

From recent articles in the daily press it appears that the public still have confused notions respecting the meaning of tin plate. It was hardly a year ago when the domestic industry was first talked about that the average newspaper reporter considered a tin plate to be composed of block tin rolled out into a thin sheet. Gradually, however, they became educated above this particular level of ignorance, and went along smoothly for some months with limited knowledge. As the discussion went more into details the words tin and terne came into requisition and gave opportunity for a redisplay of technical misinformation. The fact that makers of terne plates or roofing plates announced that they were making American tin plates was seized upon and criticised most sharply. It was pointed out that the so-called tin plate was nothing but a sheet of black iron coated with a mixture composed almost entirely of lead, and one report even added the absurd stricture that the little tin in the coating was for the purpose of giving it a bright color. Such ridiculous comments were excusable perhaps when the industry started, but it is time that even the public at large learned to use ordinary terms intelligently. Broadly speaking, the phrase "tin plate" covers everything from a sheet coated with pure tin to one coated with 90 odd per cent. of lead, known as a terne plate. It is just as difficult to make one as the other, and it would be just as much to the credit of an American manufacturer to make terne plates exclusively as it would be to make bright plates exclusively. The tin, furthermore, is not added to give it a bright color, and would be omitted altogether on account of its extra expense and uselessness in increasing the wearing qualities, were it not for the difficulty of coating sheets with pure lead.

### Use of Flux in Making Tin Plates.

Ever since the patent flux process, as it was called, for making tin plates was introduced in Wales, the tin-plate workers have been strongly opposed to it, and it has been attacked from various standpoints. The workmen say that it produces a poorer quality of plates, that it lessens the amount of hand labor and that the use of the flux is injurious to those engaged in making the plates. Machines using the flux have been the cause of much labor trouble and quite recently there was a serious disturbance in one of the large works arising from this source. It appears now with the introduction of tin-plate apparatus in this country there is likely to be introduced the controversy respecting the use of flux vs. palm oil. The following letter from Hopkin Thomas, Cleveland, Ohio, who signs himself "Tinman and Washman" is a contribution to the anti-flux argument:

Having the welfare of the American tin and terne plate industry at heart and being thoroughly cognizant with the methods of making tin and terne plates, through 20 years' experience in all the branches of the tinning department, I wish to say a few words in condemnation of the Edwards patent and others of the same kind. These patents were brought out to make an inferior plate, and it is impossible to make a good brand of tin or terne plate with them. All charcoal plates are rolled twice to give them a good polish, while with these new patents this cannot be done. Furthermore, to give the 'plate a good coating of tin, it is necessary to leave it for a time in the tin so that the coating can soak into the pores of the iron or steel; and this cannot be done with the new patents. Also, in making tin or terne plates we have what we call "menders," or plates that the assorter turns back for the purpose of being made into perfect plates. These plates are scraped and worked through the soaking pot, which is not kept very hot, and by so doing they will be made just as good as if they were perfect the first time. With the patent machines to which I refer there is no soaking pot, so the menders have to be worked through the tin pot, which is kept about 100° hotter than the soaking pot, and the consequence is that these plates worked through the tin will come out no better than wasters. Flux plates made by the new process machines will, after being in stock a few months, all become rusty. I have seen as many as 600 boxes of flux plates after being in stock a few months need to be reworked. Manufacturers in Wales would never keep a great deal of flux plates in stock for this reason. If the plates are made into cans and varnished the flux used in the tinning would sweat out into the fruit, or whatever was in the can, perhaps not in sufficient quantities to poison any one, but there would be enough there for the chemist to discover. We have tried flux many a time in the old country. It would work for awhile and just as soon as the merchant found it out, it would be discontinued. Ask any one of the people who wish to sell these patent machines how it is that not one of the tin-plate manufacturers who have any kind of a good brand have adopted these improvements; they have adopted every other improvement that has been got up in the tin-plate trade. The firms in Wales know very well that if they adopted the flux improvement they would lose in one day the reputation it took years to build. People on the other side would like to see us adopt the new flux improvement, for then they would know that we would have to import all the best brands from them. Those who have the improvements for sale will tell you that they can save 25 cents a box in the cost of manufacture, but they do not tell you what you are going to get a box for the plates after you make them. If you save 25 cents a box in making the plates and lose \$1 or \$2 in selling them, and perhaps get no sale at all, the investment will not prove very profitable—like the saying in the old country, "A penny wise and pound foolish." My advice to those people who intend trying the improved flux machines is to build their stacks 17 feet long by 6 feet wide and put four flues for four pots for tin and three flues for three pots in the lead or terne. By so doing, when they want to change and take these pots out and put other pots in, they can do so without tearing the stack down. We can make just as good tin and terne plates here in America as can be produced in the world—that is, if we go at it in the right way. Let the American firms who go at it begin in the right way and make the good brands. They cost but little more, and there is more money in good brands than in poor ones.

# HARDWARE.

## Condition of Trade.

**T**HE TRADE are at this time experiencing the quiet which is expected at this season. The volume of business, except in a few special lines, is small. This is accounted for in large measure by the fact that both wholesale and retail trade are deferring purchases for immediate shipment until after the taking of the annual inventory, and at the same time travelers are nearly all at home, the usual solicitation of business in this way being discontinued for the time. There is also on the part of merchants a disposition to be conservative in the purchase of goods, in view of the fact that the market, as a whole, is without special strength, having been characterized during the season by a gradual falling of prices in certain staple lines which are often taken as indicative of the condition of the market as a whole. The result has been a lack of confidence that goods which have declined to what is regarded as a very low figure may not decline still further. The course of Wire Nails is a striking illustration. It is, however, to be borne in mind that the market as a whole is in a much better condition than such staple lines as are referred to above, the prices of General Hardware as a rule being quite well maintained. In connection with the feeling that the market as a whole is devoid of special strength, there is, however, a very general conviction that business in 1892 must be of large volume, with the probability that there will be a recovery in prices to a greater or less extent. There are many well-informed observers of the market, whose judgment is entitled to weight, who anticipate that business will set in early and in considerable volume. If these anticipations should be realized it is likely that there would be prompt advances in some lines which have been unprofitably low. The safety of the financial situation and the prevalence of general prosperity are features of the general condition full of encouragement.

### Chicago.

(By Telegraph.)

Jobbers of Shelf Hardware are still doing a fair business, but orders are diminishing with the waning year and with the return to headquarters of traveling salesmen. Inventorying is now in progress, and no special effort will be made to stir up trade until after the new year is

formally ushered in. The jobbers of heavy Hardware, and particularly those who make a specialty of railroad and machinists' supplies, are very busy, doing more than for a long time. The demand in this direction bids fair to increase rather than to show a falling off. Manufacturers' agents for Hardware specialties report heavy orders for delivery the first quarter of next year, but prices have not been altogether satisfactory. In fact, in some branches a still lower level has been struck than had been deemed probable. All the conditions seem to favor advanced rates, and the weakness shown is very unexpected. Staple goods are, of course, the most severely affected.

### St. Louis.

(By Telegraph.)

As we approach the close of the year the demand for Hardware continues to fall off. Jobbers are making preparations for their annual stock taking, and the retail trade are rushed to keep up with the demand for holiday goods. Staple goods are not in much demand, and shelf goods are much neglected. The demand for Wire Nails continues steady, and at prices ruling to-day they are considered a safe purchase. The outlook, so far as the Hardware trade is interested, is considered encouraging, and jobbers are already laying their plans to increase their trade during the coming year. The South, which has been such a disappointment during the past three months, is expected to play a leading part in this increase, and with the gains made during the past year in the Northwest it seems more than probable that jobbers are in a fair way to have their anticipations realized.

## Notes on Prices.

**Cut Nails.**—Cut Nails are in only moderate demand and the market is decidedly sluggish. The orders are principally for moderate lots for immediate shipment or for larger parcels for delivery early in the year. Some purchasers are taking advantage of what they consider the low prices now ruling, but as a rule they are not anticipating their requirements with much liberality. Quotations remain substantially as they have been for several weeks, on the basis of \$1.45 for round lots at mill, with a disposition on the part of many of the mills to quote slightly lower figures if necessary. New York quotations are \$1.55 to \$1.60, on dock, the price for small lots from store being \$1.65 to \$1.75.

**Chicago, by Telegraph.**—Steel Cut Nails are in reasonably good demand for January delivery, but manufacturers are endeavoring to confine sales to this month. Wheeling Nails are offered here for immediate delivery at \$1.62½, Chicago, for 80-cent average. Local makers quote \$1.65, and are securing enough business at that

rate to run full time double turn. Jobbers continue to quote \$1.75 from stock.

**Wire Nails.**—The principal feature in connection with the Wire Nail market which calls for mention is the fact that there is more disposition on the part of the mills to meet on ordinary good orders the extremely low prices recently made on some exceptionally heavy purchases. The market has settled to a slightly lower figure, so that \$1.65 may be named as a general quotation for carload lots at mill, while \$1.60 is obtainable on especially desirable orders. The volume of business is not specially large, although the demand is somewhat stimulated by the low prices ruling. The quotations for small lots from jobbers in different parts of the country vary considerably owing to the location and special circumstances. The regular New York quotations for small parcels from store are \$1.95 to \$2.

**Chicago, by Telegraph.**—The inquiry for delivery next month is quite large, but manufacturers are not disposed to anticipate the future. The low prices they quote are for immediate shipment. Factory rates rule at about \$1.80, Chicago. Jobbers are now selling at \$1.90 to \$1.95 from store, with 5 cents off for carloads, but report their carload trade very light.

**Barb Wire.**—As usual at this season, the demand is moderate. Merchants are not disposed to anticipate their wants, and orders are accordingly light. Prices remain without change, and are regularly maintained.

**Chicago, by Telegraph.**—The Columbia Patent Company report a fair volume of business for the time of the year. Their schedule of prices is as yet unchanged, but the impression is strong throughout the trade that an upward movement is pending.

**Curry Combs.**—The managing directors of the American Curry Comb Company, Troy, N. Y., and 33 Chambers street, New York, held a meeting last week, when the matter of cost and prices was thoroughly discussed. It was decided to make a substantial reduction on prices which have already been quoted to the trade. It is now in the hands of the printer, and will be issued to the trade in the course of a few days.

**Chucks, Drills, &c.**—We herewith give price-list and discounts of Chucks, Drills, Dividers, &c., manufactured by J. H. Hoague, Chicopee, Mass., which are subject to a discount of 20 and 10 per cent.:

### Bit Brace Chucks.

	Per doz.
5-16 inch.....	\$18.00
3-16 ".....	15.00
½ ".....	14.00

### Solid Steel Chucks.

	Per doz.
No. 1. Holds from 5-16 down to 1-16 inch.....	\$18.00
No. 2, " " 3-16 " 1-32 ".....	15.00
No. 3, " " ½ " 0 ".....	13.50



### Automatic Drills for Iron or Wood.

	Each.
No 1, 3-16 Steel Chuck.....	\$2.00
No. 2, $\frac{1}{8}$ " " .....	1.75
Screw Driver, extra.....	.15

*Automatic Spring Drill for Metal or Wood.*

No. 3, 3-16 Steel Chuck.....	Each.	\$2.00
No. 1/8 " " .....		1.75
Screw Driver, extra.....		.15

### *Dividers and Distance Marker.*

	Per doz.
No. 1 strikes 6-inch circle.....	\$8.00
No. 2 " 12 " " .....	8.25

### Steel Rule Trammel Points.

	Per doz.
With tool steel points.....	\$3.50

A discount of 40 per cent. is allowed from the following list of Bench Stops:

	Per doz.
Self-opening.....	\$8.00
Not self-opening.....	7.50

Tracers, Can Openers, Screw Drivers and Marking Awls are sold at net prices, as given below:

*Tracers.*

	Per gross.
No. 1.....	\$4.00
No. 2.....	4.50
No. 3.....	8.00
No. 4.....	6.00

### Can Openers.

No. 1.....	Per gross. \$2.00
No. 2 .....	3.00

### Screw Drivers.

	Per gross.
No. 1, Enameled handle.....	\$2.25
No. 2, " " .....	3.00

### Steel Marking Awls.

	Per gross.
Plain.....	\$3.00
Enameled.....	3.25

**Glass.**—There appear to be irregularities in the prices at which Glass is sold, both by jobbers and manufacturers. While it has been supposed that prices were being held up to the quotations of 80 and 10 and 5 per cent. discount for car lots, and 80 and 10 per cent. discount on less than car lots, it is reported that for desirable orders a discount of 80 and 20 per cent. has been quoted on Western Glass and 85 and 5 per cent. discount on New Jersey Glass. Whether dependence can be placed on the accuracy of these reports or not, it indicates a weak market and that schedule rates have doubtless been shaded. It is also reported that imported Glass can be bought at 80 per cent. discount, against a quoted price of 75 and 10 per cent. Even at the former price, the higher figure which the imported Glass commands shows a large percentage above the price of American Glass. This fact is significant, and would indicate that imported Glass is superior in quality to the American article. It is too early to predict what action in regard to prices will be taken by the manufacturers at their monthly meeting in January, especially in view of the present unsatisfactory condition of the market. Prices of Glass are still quoted as follows: American Window Glass, in carloads, 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

### Trade Items.

**B**UCK BROS., Millbury, Mass., advise us that during the past month they made a shipment of their Tanged Firmer Chisels to John C. Parkes & Sons, Dublin, Ireland. These goods were ordered directly from the factory with the remark that they had a customer who wanted the genuine Buck Bros.' article and would take no other.

**HAKEWESSELL & WITTIG**, Hartford, Conn., announce that they have removed to new quarters in the rear of 64 Asylum street, in that city, where with more room and better facilities, they will be enabled to execute all orders and work promptly.

REFERRING TO THE Automatic Saw Lubricator, illustrated in our issue December 10, we are advised by the manufacturer that if the hole bored in the front piece of the saw frame to receive the rod be made oval in form, it allows the lubricator to rise up and down on the blade, thus adding to its efficiency.

A CHRISTMAS GREETING from the Mason Regulator Company, Boston, Mass., is a tinted card handsomely printed, across the upper part of which is an evergreen twig, fastened with a ribbon. They express their regret that it is impossible for their many customers to be present with them at their Christmas festivities, but remembering, and desiring to be remembered, they send a twig of their Christmas tree.

THE STOCK, FIXTURES and good will of J. M. Harris, Blackstone, Va., have been purchased by the Harris-Dillard Company, who are incorporated, with a paid-up capital of \$20,000. It is proposed to carry on a business in which Heavy and Shelf Hardware, Building Material, Stoves, Agricultural Implements, Wagons, Carriages, Harness and Saddlery will be prominent lines. J. M. Harris is president; P. E. Harris vice-president, and R. F. Dillard secretary and treasurer of the company.

CAMPBELL CUTLERY COMPANY, Syracuse, N. Y., in connection with circulars of their Sliding Display Trays, furnish an instruction blank for measuring show-cases. The blank is to be filled out and returned with the order. A separate pamphlet is devoted to prices and illustrations of Nut Picks and Cracks.

AN 1891-92 CHRISTMAS and New Year greeting in the form of an attractive folder has been received from E. M. Sargent, a traveling salesman of Supplee Hardware Company, Philadelphia, Pa. These were sent to the customers of the company, with a nickel-plated Stove-Bolt pencil, which, it is suggested, may be used to "bolt wants on the want book," awaiting the coming of the salesman.

UNION HARDWARE COMPANY, Torrington, Conn., whose New York store is 95 Chambers street, in care of Tower & Lyon, are sending out an attractive hanger on which is a photograph of Joseph F. Donoghue who, in skating, holds the championship of the world. Above the photograph is a representation of the Union Extension Skate, and below it a picture of the Donoghue Racing Skate. The hanger has a tinted background, and the printing is all in colors. Mr. Donoghue is in the employ of this company, and the Donoghue Racing Skate is made under his personal supervision. The hanger is neat and attractive in appearance.

PETER A. FRASSE & Co., 95 and 97 Fulton street, New York, were incorporated under the New York State law. December 4, 1891, with John L. Howe, president, treasurer and manager; Adolph E. Brion, secretary, and John Briggs, assistant secretary. This business was es-

established in 1816 by Henry F. Frasse, who turned it over to his son, Peter A. Frasse, and J. L. Howe, the latter being now the surviving partner.

In *The Iron Age*, December 10, we erroneously reported that Velde, Rulfs & Co., Pekin, Ill., had taken possession of their new store. The statement should have been made of Feldt, Roelfs & Co., who are occupying their new premises.

IN OUR ISSUE, December 10, in referring to a change in the *personnel* of the Gorham Hardware Company, Jackson, Tenn., we inadvertently mentioned the firm as being located at Jacksonville, Fla.

THE ARCADE FILE WORKS have opened an office and store room at 83 Reade street, New York, where Mr. Steward will represent them as manager. They will carry a large and assorted stock at the above address, so as to be able to fill promptly all orders received from the New England and Middle States. Their new factory, now in course of erection at Anderson, Ind., is 517 x 40 feet, principally two stories, of stone and brick. It will be, it is stated, the most perfectly arranged and equipped File factory in the country. From that point they can quickly supply their Western trade. In making these changes, they have decided to discontinue all agencies, and to hereafter deal direct with the purchasers of Arcade goods.

THE FACTORY of John Chatillon & Sons was partially destroyed by fire on Tuesday night, the entire upper floors being completely burned out. Their warehouse, store and office remain intact, except from loss by water. A temporary delay of a few days, at most, in the execution of orders may be the result, for which they ask the indulgence of their friends and patrons.

**Order Blank for Customers.**

THE REFUSAL of customers to take goods especially ordered for them is often a source of loss and annoyance to merchants. The article may be something out of their regular line, or of such a character that it is seldom called for. R. H. Balding, Paola, Kan., sends us a form of agreement which was original with him, and which he has used for a long time with much satisfaction and saving of trouble. The blank is 4 by 8 inches in size and we give its contents, as follows:

PAOLA, KANSAS, . . . . . 189

I, *J. F.* ..... *L. F.* .....  
 of ..... County, .....  
 hereby order of *R. H. BALDING* of Paola, Kan  
 .....  
 .....  
 which I agree to receive on arrival at his store,  
 and on delivery or tender of above article, to me  
 in good order, and settle for same with.....  
 less the amount advanced. It is understood that a  
 written notice of the arrival of the article,  
 mailed to my post office address, or a verbal notice,  
 shall constitute a full tender of the article. I  
 promise to receive the goods as above on arrival, or  
 within ten days thereafter; otherwise, I promise  
 to pay the price with interest on the amount at the  
 rate of ten per cent. *per annum*, until paid, with-  
 out any relief whatever.

ORDER NO..... Signed.....  
DATE OF RECEIPT.....  
DATE OF NOTICE.....  
AMT. ADVANCED, \$..... P.O. ....

## The Future of Wire Nails.

WE GIVE BELOW an extract from the letter of a person well informed in the trade, in which he touches upon the probable future of Wire Nails, making the point that Cut Nails can be made cheaper and in addition have important advan-

Cut Nail, while they point with unconcealed complacency to the extraordinary demand which in a few years has been established for them. In the presence of these facts they do not regard theoretical arguments which tend to show that Cut Nails are after all to carry the day and to hold the market as requiring any answer. With reference to the advantages pos-

the same time inviting the correspondence of the trade as to the matter at issue:

I look upon the question as one capable of solution with almost mathematical certainty. There are two fixed elements which can neither be explained away nor denied with truth. One is that the holding power of a Wire Nail is far inferior to that of a Cut Nail. This was established scientifically by the investigations of the

*Mrs. Cuyler Albany 22<sup>d</sup> Dec<sup>r</sup> 1797*

*Bought of Samuel Hill*

AT HIS WHOLESALE & RETAIL HARDWARE STORE.

*Sign of the Golden Hinge.*

*North side of State Street, near the Dutch Church:  
has just Imported a large assortment of:  
Ironmongery Cutlery, Saddlery, & Hardware in Gen<sup>l</sup>!*

<i>1 Pair Snap Jaw trestles</i>	<i>— " 14<sup>00</sup> —</i>
<i>2 doz Gun bow Runn Forks — 15<sup>00</sup></i>	<i>— " 10<sup>00</sup> —</i>
<i>1 Pair Dr. Cams</i>	<i>— " 9<sup>00</sup> —</i>
<i>1 Pair Steel Snuffers</i>	<i>— " 2<sup>00</sup> 6</i>
<i>1 Coffee mill</i>	<i>— " 10<sup>00</sup> 6</i>
<i>1 Ivory top Caster</i>	<i>— " 10<sup>00</sup> —</i>
<i>1 Lap<sup>d</sup> knife Tray</i>	<i>— " 5<sup>00</sup> 6</i>
<i>1 Iron 4/ Broad Basket 5<sup>00</sup></i>	<i>— " 9<sup>00</sup> —</i>
	<i><u>\$ 4<sup>00</sup> 10<sup>00</sup> 6</u></i>
<i>Sundries</i>	<i>— " 3<sup>00</sup> —</i>
<i>Rec<sup>d</sup> pay<sup>t</sup> for Sam<sup>l</sup> Hill</i>	<i>— " 5<sup>00</sup> 13<sup>00</sup> 6</i>
<i>Am<sup>l</sup> 7 1798</i>	<i>J<sup>n</sup> Godfrey</i>

Fig. 1.—Bill from Samuel Hill, 1797.

tages over Wire Nails. From these facts he infers that it is only a question of time when the Wire Nail will be driven from the market and the Cut Nail assume its former supremacy. Similar arguments have before been made and are met by the advocates of the Wire Nail, who lay especial emphasis on the fact that their goods are for many uses superior to the

assessed by the different kinds of Nails, however, no persons are in a better condition to judge than the retail Hardwaremen, who are in constant contact with consumers and hear their comments on the goods. The matter in question is one of very general interest, and we take pleasure in laying before our readers our correspondent's remarks on the subject, at

United States officers at the Watertown Arsenal in Massachusetts, published in detail, and culminating in a refusal to recommend them for the use of the United States Government. It has since been demonstrated practically wherever Wire Nails have been largely introduced by the undeniable fact that they fail to do the work required of them unless used in larger numbers than Cut Nails would be used for the same work. In this section,



for instance, the unanimous statement of the carpenters is that floors laid with them spring up, covering boards warp and start off, clapboards curl in the sun, shingles rise from the roof, pickets get loose on the fence, and facing boards cannot be drawn together, excepting where the Nails are used in unusual quantities. The other fact, denied by no one informed in the business, is that the Wire Nails cannot be made as cheaply, Nail for Nail, as the Cut Nails. That the public will pay a higher price for a poorer article after proper testing is inconceivable. I consider that the Wire Nail must go, and that this would happen even if methods

of the small dealers, and the manufacturers, we think, have little or nothing on hand. Some failures have taken place in the Southwest portion of the country, owing to local causes, especially the price of cotton, but we think that the indebtedness of the Western farmers and merchants has been canceled to some extent, by payments which have been derived from the crop of 1891, and a still larger amount will be canceled, no doubt, within the next six months. Money is apparently easy in all the Western cities of any size, and various enterprises which have been unable to materialize during the extreme stringency of the past 12 months will now

### Some Old Invoices.

WE GIVE HERewith a series of invoices covering a period from 1797 to 1830. These are not only interesting as relics of bygone days, but because the Albany Hardware and Iron Company of Albany, N. Y., to whom we are indebted for these bills and information, are in direct line of succession of the old house of Samuel Hill. It is also interesting to know that the establishment of the Albany Hardware and Iron Com-



**For Sale,**  
**On the most liberal terms:**

SWEDES, Russia, English and American flat, square and round Iron, Share Moulds, Horse Nail Rods, sheet, hoop and band Iron, English and Swedes Blistered, German, Shear, Crowley, Spring and Cast Steel, Saw-Mill, Cross-Cut and Tenant Saws, Mill Cranks, Spindles, &c.

**DUTCH BOLTING CLOTHS,**  
**of superior quality.**

Anvils, Vices, Bellows Pipe, sledge and Hand Hammers, English and American Shovels and Spades, Tin Plate, Iron Wire, Wrought and Cut Nails, Sheet and Bar Lead.

**HOLLOW WARE,**  
**Stoves and Stove Pipe.**

Together with an extensive assortment of SHELF GOODS, consisting of Cutlery, Saddlery, Brass Furniture, Hinges, Latches, Bolts, Locks, Screws, Files and Joiners' Tools.

*Albany, July 2nd 1822*

*Denison*

*Bot of W. & G. Humphrey,*  
*Sign of the Hand-Saws, No. 45 State-street,*

*1/2 doz Chest Locks — 11 — 0. 5. 6*

*1/2 " Cast Bolt 3/6 0. 1. 9*

*1 " Cornsuckles — 0. 12. 0*

*1/3 " Locks — 4 0. 2. 8*

*3/2 " Escutcheons — 1/6 — 0. 1. 0*

*£ 1. 2. 11*

*Paid for them*  
*W. M. Miles*

Fig. 2.—Bill from W. & G. Humphrey, 1822.

for cheapening its production should be discovered. The markets have indicated for some time that the tide has turned.

### The Outlook for 1892.

FROM AN EXCEPTIONALLY well-informed Hardwareman connected with mercantile and manufacturing interests we have the following expression of his views as to the prospect for business next season:

We are well aware that in times like the present, when trade is quiet and little or nothing doing, some of the wise ones will think they have found a scheme to correct existing troubles. Every one is waiting for 1892 to come in—all looking for better business than they have had. We don't think that business has come up to the expectations of a large number in trade. It may be they expected too much, and believed there would be a business boom of some kind take place. But we have never known so favorable an outlook for business as that for 1892 presents. Stocks are apparently light in the hands

be brought to the front. For this and many other reasons the indications are that business will be much better and more satisfactory to all engaged in trade in 1892. We know it has been usually thought that Presidential elections depress business, but we are not inclined to think this will be the case in the approaching year.

THE CHICAGO REPRESENTATIVE of P. L. Kimberly & Co., of Sharon, Pa., familiarly known in the trade as "Billy" Egan, has a deserved reputation as a story teller. The recent developments in the Wire Nail trade drew out of him a characteristic anecdote. Said he: "It was away back in the seventies when there was a very high list on Rivets, or something else, that a friend of mine endeavored to negotiate a sale. He offered a large buyer a good big quantity at 70 and 20 and 5. 'Let me see,' said the buyer; 'I have a good stock on hand, but the terms are tempting; 70 and 20 are 90 and 5 are 95. Tell you what I'll do: Make it an even 100 and I'll look over the stock and see if I can't take in a carload.'"

pany stands to-day on the same spot where swung the sign of the Golden Hinge 100 years ago. We have no information as to when Samuel Hill began business, but it appears that near the end of the year 1797 he sold Mrs. Cuyler sundry household goods, for which she paid in April of the succeeding year. In 1822 Mr. Denison bought house-furnishing goods of W. & G. Humphrey, as shown in Fig. 2, whose place of business was distinguished by the sign of the Hand Saws. Lansing Pruyn & Co. had adopted the sign of the Knob, Lock and Hinge, as shown on the bill sold to the Albany Theater in 1830. The order in which the succeeding firms conducted the business is as follows: Samuel Hill was succeeded by John Pruyn, who in turn was succeeded in 1829 by Lansing Pruyn & Co. This firm was followed by several firms, in all of whose titles the name of Lansing Pruyn appeared. After this W. & G. Humphrey purchased the bus-

iness and were succeeded by Humphrey & Co., who in 1852 sold out to Davidson & Viele. Maurice E. Viele continued to occupy the store, either as sole proprietor or with partners, until June, 1891, when he sold out to the Albany Hardware and Iron Company. The present company occupy a five-story building, Nos. 39, 41 and 43 State street, supplemented by two buildings on Norton street, and are an incorporation, with a capital stock of \$125,000.

### Price-Lists, Circulars, &c.

**R**EADING HARDWARE COMPANY, Reading, Pa., with warehouses at New York, Philadelphia and Chicago: Supplement No. 2. This illustrated and descriptive catalogue contains over 100

Latches, Mortise Knob Locks, Mortise Knob Latches and Bolts, Store Door Handles and Locks, &c. The two patterns are also shown in Sliding Door Locks, Lever Handles, Plates for Electric Push Buttons and Automatic Burners, Butts, Door Pulls, Push Plates, Mortise Flush Bolts, Letter Box Plates, Sash Lifts, Drawer Pulls, Bronze Metal Strap Hinges, &c. These patterns add greatly to the attractiveness of their already extensive line of goods, and will doubtless prove popular with the trade. The typographical work and paper in the catalogue are deserving of mention, as both are excellent.

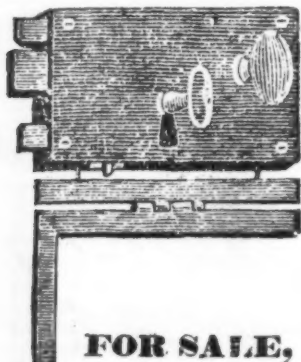
ST. LOUIS CORRUGATING COMPANY St. Louis, Mo.: Sheet Metal Roofing, Siding, Ceiling, &c. Illustrations are given of corrugated, pressed standing seam, triple cap pressed standing seam, corrugated pressed standing seam, roll cap and V

plow, low top; oval iron gig, ball-top hook, New Orleans ball top, with chain, dray, farmers' extra Richmond lace, mine, Concord, &c. They also manufacture Cart Trees, ironed and unironed, Plantation Cart Trees, Mexican and Mexican with Hooks. A revised price-list accompanies the catalogue.

E. C. MEACHAM ARMS COMPANY, St. Louis, Mo.: Price current No. 475. Guns, Game Traps, Gun Implements, Gun and Cartridge Cases, Decoy Ducks, Game Bags, Sights, Gun material, Cartridges, &c. The regular key to quotations for dealers accompanies the catalogue.

WYCKOFF, SEAMANS & BENEDICT, New York: Remington Standard Typewriter. A handsomely engraved card, showing the No. 2 Remington Standard Typewriter, with roses on either side. Attached to the lower part of the card are calendar leaves, with dates in desirable-

### LANSING PRUYN & Co.



**FOR SALE,**

On the most liberal terms:

RUSSIA, Swedes, English and American Iron, Axletree Arms, Horse Nail and Spike Rods, Hoop and Band Iron, Cast, English, Blistered, German and Swedes Steel, Anvils, Vices, Bel-lows, Pipes, Cut and Wrought Nails of every description.

### BRASS APPARATUS,

Shovel and Tonge, Knives and Forks, Tea, Bread and Snuffer Trays, Candlesticks, Brass Kettles, Sheet and Bar Lead, Powder and Shot, Dunlop's Blacking, Hemming's & Pardons Needles.

### HOLLOW-WARE OF EVERY DESCRIPTION.



### HOUSE CARPENTERS, CABINET AND COACH-MAKER TOOLS,

At the Manufacturers prices, Chisels, Gouges, Plane Irons, Gauges, Brace and Bits, and House Trimmings of every description, &c. &c.

ALBANY, 8 March 1890

*Albany Theatre*

Bill of **LANSING PRUYN & CO.**

At the sign of the Knob Lock and Hinge,

NEXT DOOR NORTH OF THE BANK OF ALBANY.

4 to Blue	1/4	0.5-4
1 Gros Lany	3/10	0.3-12.
3 to Nails	7	0.1-9
4 to	7	0.2-4
2 1/16 & 8 Wre Nails	1/3	0.2-9
7 1/2 inches of clare Nails	7	0.16.0
Tri paynt	7	0.2-0
	7	0.18.0

*G. D. Pruyne & Co*

Fig. 3.—Bill from Lansing Pruyne & Co., 1890.

pages and conforms in size to their other publications. The Columbian design and Fluted pattern goods, as shown, together with Vassar Cylinder Locks and Latches, are productions of this year. All Columbia Design goods are made of genuine bronze metal, and can be furnished in the following surface finishes: Antique Copper Bronze, Antique Brass, Natural Copper, Natural Brass, Mottled Copper, Dark Steel Bronze, Gold Bronze and Oxidized Silver. All Fluted pattern and Plain Bronze goods are also made of genuine Bronze metal, and can be furnished in the following surface finishes: Plain Bronze, (natural color), Antique Copper Bronze and Oxidized Silver. The Columbia and Fluted patterns are shown, in connection with Vassar Cylinder Locks, in Front Door Mortise Locks, Vestibule Door Mortise

crimped Roofing, also of Siding in various styles. Sheet Metal Ceilings are shown in corrugated, crosswise corrugated, twilled corrugated, beaded and Climax patterns, also Ceiling Moldings, Mitered Moldings, Panel Strips, Rosettes, &c. Shutters are furnished in corrugated or flat Sheet Iron, single or double, and with or without hinges. The manufacturers state that they carry a complete stock of these goods on hand at all times, thus insuring prompt shipment of orders.

THE FERRIS HAME COMPANY, Limewood, Ohio: Ferris Rock Elm and Oak Hames. Hames are shown in iron over top, X C plate over top, ironed over top with oval iron, iron over top, combination loop; iron over top with wide staple. Ox Hames: hand-forged hook, iron-bound

sized figures. The appearance of the card is pleasing, embodying as it does elegance of design and execution.

MARTEN DOSCHER, 88 Chambers street, New York: Marten Doscher's Bench Planes, also English and American Iron Bench and Molding Planes. The price-list gives list prices in a compact and comprehensive form, embracing a varied line of these goods.

THE THOMAS MFG. COMPANY, Springfield, Ohio: The Thomas Lawn Mowers. An 1892 catalogue, illustrated in colors, shows the Thomas, Miller and Greyhound Mowers, with descriptions of each. The cuts represent the machines as they are made, in all the details of construction, color of paint and finish.



E. C. ELY, Leona, Pa.: Hardware Specialties. Ely's Common-Sense Hay-Fork Grapple, Steel Ice Tongs, Steel Pincers, Cutting Pincers, &c. The advantages of these goods are alluded to and list prices given.

### It Is Reported—

That the stock and building of the Henk Hardware Company, at Chaska, Minn., were partially destroyed by fire on the 11th inst. Insurance fully covered the loss.

That C. E. Grass' Hardware store at Frankton, Ind., was destroyed by fire on the 10th inst.

That J. E. Harvey's Hardware store at Mumford, N. Y., was burglarized on the 10th inst.

That L. W. Lazell, Hardware merchant, Stockton, N. Y., has sold his stock to L. F. Shepard, also of Stockton, possession to be given about January 10. Mr. Lazell will continue in the Agricultural Implement business.

That A. H. Torricelli has removed his Hardware store from Boothbay Harbor to Camden Maine.

That W. B. Shankland, Don Wentworth and Porter Johnson have purchased of Captain Johnson the M. A. Jennings' Hardware stock at Benton Harbor, Mich., and will conduct the Hardware business.

That G. N. & E. R. Moses have purchased the Hardware and Implement business of Alexander Dennis, Hosinton, Kan., and will continue it at the old stand.

That E. Backer is about to open a Hardware store at Fort Howard, Wis.

That E. B. Booker has sold his interest in the Hardware business at Cerro Gordo, Ill., to his partner, M. N. Mickles.

That C. Hardy & Co.'s Hardware store, Red Key, Ind., was destroyed by fire on the 10th inst.

That Charles E. Williams has recently commenced the Hardware business at Tampico, Ill.

That J. E. Harden & Co., Monterey, Ky., have been succeeded by a new firm under the style of Sanford & Clark.

That the name of the G. W. Jenkins Hardware Company, Malden, Mass., has been changed to Malden Hardware Company.

That George E. Teele, dealer in Hardware, Watertown, Mass., has been damaged by fire to the extent of \$2000.

That Wheeler & Aldrich, Adrian, Mich., have dissolved partnership.

That Reed & Graves are a new Hardware firm at Antwerp, Ohio.

That S. B. Martin has commenced the Hardware business at Dalton, Ohio.

That the Hardware stock and business of the firm of J. A. McDermott & Co., Clyde, Ohio, have been disposed of to C. Sinnig.

That Hancock & Humphrey have commenced the Hardware business at Union Grove, Wis.

That Isler & Crosby, dealers in Hardware, Lawndale, Texas, recently suffered a loss of \$1400 by fire. The insurance will about cover the loss.

That Davis & King have purchased an established Hardware business at Blairstown, Iowa

That the establishment of McLaughlin Bros., dealers in Hardware, Litchfield, Minn., was destroyed by fire on the 15th inst. Loss, \$6500; insurance, \$4700.

That Joseph Helm is erecting a Hardware establishment at Red Lake Falls, Minn.

That the Hardware firm of Hurst & Bean, Corydon, Ind., has been dissolved by mutual consent. J. J. Bulleit has pur-

chased Mr. Bean's interest and will continue the business with Mr. Hurst under the firm name of Bulleit & Hurst.

That Millinthin & Tosch will put in a stock of Hardware in the spring at Sleepy Eye, Minn.

That Walter Radford has recently purchased the interest of Mr. Downey in the Hardware firm of Downey & Jernigan, Pembroke, Ky. The firm name will now be Radford & Jernigan.

That S. B. Spencer has purchased the Hardware stock of H. M. White, Maiden Rock, Wis.

That Burstrom & Blatz are a new Hardware and Implement firm at Chesterton, Ind.

That J. E. Nelson has recently begun the Hardware business at Jonesborough, Ind.

That A. B. Pickering has bought out the Hardware store of C. H. Bliss at Thomason, Pa.

That L. H. Cary is a new Hardwareman at Seneca Falls, N. Y.

That Thomas & Dougherty have commenced the Hardware business at Cromwell, Iowa.

That Roath & Van Doren, dealers in Implements, Adrian, Mich., have dissolved partnership. Chester C. Van Doren will continue the business.

That R. F. James, dealer in Hardware, Stoves, &c., Lexington, Ky., was recently damaged by fire.

That the Chapin-Wells Hardware Company, Duluth, Minn., have taken possession of their handsome new wholesale house. Their present retail quarters will be retained until the spring.

That Hawes & Clark have recently become one of the Hardware firms of Des Moines, Iowa.

That Gochnour & Kelly are a new Hardware firm at Fairbank, Iowa.

That John Jackson, dealer in Agricultural Implements, Harlan, Iowa, has sold out his business to Warren & Barlow.

That Stadt Bros. have entered the Hardware and Agricultural Implement business at Glasco, Kan.

That John Cassel, dealer in Implements, Harbor Springs, Mich., has sold out his business.

That Crouse & Leonard are a new Hardware firm at Williamsburg, Kan.

That the Hardware store of J. F. Humiston, at Huron Lake, Wis., was recently broken into by burglars.

That F. D. Woodworth is a new Hardware and Implement dealer at Onondaga, Mich.

That Saranac, Mich., has a new Implement concern in the firm of White & Wilkinson, who have recently commenced business at that point.

That Marsh & Bagley, Creighton, Neb., have commenced the Hardware business.

That Grimes & Pelton, Ilion, N. Y., were recently damaged by fire

That W. H. Gordon & Co., Marion, Ohio, dealers in Hardware, have sold out their business to F. Holmes.

That H. D. Kay is a new Hardware and Stove dealer at Tekoa, Wash.

That the Hardware store of Maclechert & Dunbar, Mason City, Iowa, was destroyed by fire 11th inst.

That G. T. Malford of Odon, Ind., has purchased the Hardware stock of Barrett & Stokes, Princeton, Ind.

That the Hardware firm heretofore known as Martin & Ralston, Piqua, Ohio, will hereafter conduct business under the firm name of Wertz & Ralston, W. S. Wertz having purchased the interest of B. W. Martin.

That Hackett & Barcus, dealers in Hardware, Queen Anne, Ind., have dissolved partnership. T. C. Hackett will continue the business alone.

That the Hardware store of McCrea & Co., Rockford, Wash., was robbed recently.

That the Hardware establishment of W. C. Alden & Co. has changed hands. Herman Yetsey and T. M. Valentine are the purchasers.

That L. Kientz has sold his Hardware store at Alhambra, Ill., to J. Gerrig, Jr. Mr. Kientz intends to locate in California.

That F. W. Briggs will commence the Hardware business at Fredonia, N. Y., in the spring.

That G. H. Paddock, Homer, N. Y., is moving his Hardware stock to larger quarters.

That J. C. Matthews and J. P. Gustin have formed a partnership at Wyaconda, Mo., for the purpose of carrying on the Hardware business.

That Capt. John Robinson has purchased the Jennings Hardware store at Benton Harbor, Mich.

That Henry Taylor, Perth, Ont., was recently burned out

That the W. A. Huffman Implement Company, Forth Worth, Texas, have sold out their business, stock and good will to Messrs. Stratton & White of Cleburne, Texas. This company were established in 1876 and their transactions extend over every part of the Northwest, Central and Southwest Texas, and into New Mexico, Indian Territory and Arkansas. The annual volume of business aggregates between \$350,000 and \$500,000. Mr. Stratton and Mr. White are thoroughly experienced business men, equipped with ample capital, and will continue the business in an enterprising and energetic manner.

### Exports.

PER SHIP J. D. BISCHOFF, NOVEMBER 27, 1891, FOR SYDNEY, NEW SOUTH WALES.

By Alfred Field & Co.—34 dozen Bird Cages.  
By Atlas Tack Company.—20 boxes Tacks, 100 boxes Nails.  
By B. F. Avery & Sons.—1000 pounds Plows.  
By Chas. B. Seabury.—1 box Fire Arms.  
By W. & B. Douglas.—8 boxes Pumps.  
By W. K. Freeman.—1 case Drills, 198 pounds Fire Arms, 20 dozen Handled Axes, 3 cases Hardware, 15 cases Cartridges, 30,000 Primers.  
By Healy & Earl.—6 boxes Iron Pumps, 1 case Emery Wheels.  
By Fairpoint Mfg. Company.—1 cask Silver Plated Ware.  
By Wilcox Silver Plate Company.—4 casks Plated Ware.  
By R. H. Dana & Co.—1 case Wire Goods.  
By Arkell & Douglas.—18 packages Lamp-ware.  
By F. B. Wheeler & Co.—9 cases Hardware, 1 case Cutlery, 8 cases Hardware.

PER SCHOONER CLIFTON, DECEMBER 1, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By E. T. Hopkins.—2 cases Hardware.  
By Johnson Harvester Company.—21 packages Agricultural Implements.  
By H. W. Peabody & Co.—8 cases Hardware, 5 cases Farming Implements.  
By Corner Bros. & Co.—20,000 Cartridges.  
By W. B. Fox & Bro.—18 cases Agricultural Implements, 20 kegs Iron Nails.  
By J. Norton's Son.—2 cases Pumps, 14 cases Fiber Ware.  
By Arkell & Douglas.—74 dozen Axes, 18 crates Agricultural Implements, 12 Barrows, 2 dozen Axes, 9 dozen Hoes, 1 case Potato Diggers, 32 dozen Saws, 25 dozen Axes, 18 dozen Braces, 48 gross Pencils, 6 packages Agricultural Implements, 3 cases Rakes and Forks, 23 cases General Hardware.  
By Coombs, Crosby & Eddy.—1 gross Edge Tools, 26 dozen Edge Tools, 3 packages Scales.  
By W. H. Crossman & Bro.—62 cases Agricultural Implements, 60 kegs Nails, 22 cases Hardware, 15 cases Carpenters' Hardware, 10 cases Builders' Hardware, 256 cases Agricultural Implements, 3 bales Cordage, 46 cases Carriage Hardware, 100 reels Barb Wire, 2 cases Scales, 20 cases Loaded Metallic Cartridges.

PER BARK ANNIE REED, DECEMBER 5, 1891,  
FOR DUNEDIN, NEW ZEALAND.

By Edward Miller & Co.—21 packages Lamp Goods.

By Rochester Lamp Company.—2 boxes Lamp Goods.

By Manhattan Brass Company.—15 packages Brass Goods.

By Arkell & Douglas.—38 dozen Lamp Goods, 4 gross Sandpaper, 2 Agricultural Implements, 24 Guns, 18,000 Cartridges, 36 Wringers, 23 dozen Axes, 2000 pounds Nails, 24 Churns, 1 gross Traps, 40 Choppers, 19 Pumps, 1 bundle Cordage, 9 cases Horse Nails, 2 cases Scales, 3 cases Horse Nails, 22 cases Hardware, 11 cases Tools.

By S. Hoffnung & Co.—4 packages Plated Ware.

FOR AUCKLAND.

By the F. B. Wheeler Company.—2 cases Hardware.

By McLean Bros. & Rigg.—8 dozen Axes.

By W. H. Crossman & Bro.—12 cases Lamp Goods, 2 gross Razor Strops.

By S. Hoffnung & Co.—18 dozen Thermometers, 12 gross Rules.

By Edward Miller & Co.—24 packages Lamp Goods.

By Arkell & Douglas.—10 dozen Tools, 2 cases Traps, 89 cases Axes, 6 crates Stones, 5 cases Horse Nails, 1 case Cultivators, 2 cases Scales, 4 racks Churns, 2 crates Shellers, 1 case Pumps, 2 boxes Wire Goods, 1 case Wringers, 3 packages Lampware.

FOR WELLINGTON.

By Atlas Tack Corporation.—10 cases Nails.

By F. H. Lovell & Co.—23 packages Lamp Goods.

By W. R. Grace & Co.—40 cases Axes.

By Alfred Field & Co.—2 cases Axes.

By Henry Diston & Sons.—6 cases Hardware.

By Australasian-American Shipping Company.—56 cases Axes.

By Arkell & Douglas.—109 cases Axes, 2 cases Plated Ware, 1 bundle Scoops, 3 packages Lampware, 4 packages Choppers, 4 cases Mowers, 1 case Agricultural Implements, 13 cases Wringers, 6 cases Horse Nails, 1 case Bolts, 2 cases Pencils, 11 cases Horse Nails, 29 packages Lampware, 9 cases Tools, 23 cases Hardware.

By the F. B. Wheeler Company.—3 cases Hardware.

By S. Hoffnung & Co.—1 box Lamp Goods.

By W. H. Crossman & Bro.—1 case Hay Knives, 2 cases Hoes, 2 cases Hammers, 4 packages Harrows, 4 cases Plow Parts, 13 dozen Hatchets, 35 cases Horse Nails, 10 kegs Nails, 2 cases Die Stocks, 13 packages and 4 cases Hardware.

By McLean Bros. & Rigg.—1 crate Air Guns, 2 cases Whetstones, 3 cases Bush Hooks, 1 case Wrenches, 1 case Pumps, 1 case Locks, 1 case Braces, 2 cases Picks, 1 case Hooks, 11 cases Wringers, 4 cases Wire Goods, 3 cases Bird Cages, 4 cases Traps, 6 cases Hatchets, 10 packages Lampware, 2 cases Carpet Sweepers, 2 dozen Lanterns, 14 dozen Axes, 1 case Hog Ringers, 3 cases Axes, 3 cases Hardware, 1 case Plumbs and Levels, 1 case Sash Pulleys, 1 case File Handles, 6 cases Scales, 1 package Rat Traps, 1 case Oil Cans, 10 cases Horse Nails, 1 case Egg Beaters, 1 case Rakes, 1 case Lead Pencils, 12 cases Horse Nails, 1 case Broilers, 33 cases Axes, 11 cases Lampware, 1 case Mouse Traps, 36 dozen Hammers, 1 case Can Openers, 12 crates Churns, 2 packages Lanterns, 2 cases Broilers, 5 packages Bush Hooks, 5 cases Scales, 4 packages Pumps, 24 packages Lampware, 10 cases Axes, 7 cases Picks, 6 packages Lampware, 6 cases Axes, 3 packages Wringers, 44 packages Axes, 1 package Bolt Cutters, 1 case Locks, 1 case Lampware, 18 cases Axes, 6 cases Wringers, 6 cases Lampware, 2 barrels Fry Pans, 1 case Hammers, 5 cases Wringers, 104 cases Cartridges, 1 case Cartridges and Primers.

PER BARK NERO, DECEMBER 7, 1891, FOR  
ADELAIDE, AUSTRALIA.

By Meriden Britannia Company.—4 packages Silver-Plated Ware, 4 packages Silver-Plated Ware.

By Corner Bros. & Co.—3 dozen Axes.

By Strong & Troubridge.—60 Washers, 12 dozen Hardware.

By R. H. Dana & Co.—1 case Hammers, 6 cases Meat Cutters, 6 cases Bird Cages.

By John A. Gifford.—5 packages Saws, 5 cases Hardware.

By McLean Bros. & Rigg.—20 cases Axes, 1 case Pumps, 2 cases Wire Cloth, 25 cases Axes, 22 cases Plows, 3 dozen Axes.

By Mailer & Queveau.—48 cases Windmills.

By W. H. Crossman & Bro.—7 cases Nails, 7 cases Hardware, 3 packages Pump Parts, 2 cases Agricultural Implements, 2 packages Plated Ware, 1 case Lamp Goods, 4 cases Rifles, 1 case Reloading Tools, 30 cases Cartridges and Primers, 1 case Hoes, 6 cases

Hatchets, 4 cases Wrenches, 2 cases Cartridge Loaders, 6 packages Hardware, 30 cases Hay Knives, 1 case Cages, 1 case Traps, 1 case Rakes, 57 cases Axes, 16 cases Wringers.

By H. W. Peabody & Co.—3 cases Hardware, 7 cases Nails, 17 packages Hardware, 42 cases Wringers, 2 cases Rat Traps, 10 cases Agate Ware, 2 cases Farming Implements, 4 dozen Wringers, 1 case Pumps, 5 packages Lampware, 9 packages Hardware, 16 cases Cartridges, 2 cases Mangles, 5 cases Hardware, 8 cases Wringers, 1 case Mattocks, 2 cases Bird Cages, 12 boxes Nails, 2 cases Pumps, 1 case Hoes, 1 case Traps, 31 cases Hardware, 15 cases Tools, 1 case Plated Ware, 48 cases Tools, 16 cases Tools, 20 crates Stones, 3 cases Hardware, 2 cases Churns, 6 cases Cartridges, 1 case Primers.

## Paints and Colors.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

The entire market has been quiet and wholly devoid of new or interesting features. Traveling salesmen for the jobbing houses have finished their trips for the year, as have also those representing manufacturers of various specialties, and so far as the leading lines of Paints and Colors are concerned, the movement at present is confined almost wholly to small lots of goods that may be required to tide over some pressing want. With business thus practically at a standstill values remain almost stationary throughout the list, and about the only concern manifested by jobbers or retailers is on the matter of what change, if any, will be made in White Lead prices at the beginning of the coming year. Speaking in a general way, the outlook is for steady prices on pretty much everything in the Paint line, rather than any radical changes.

**White Lead.**—The situation in this line is precisely as it was a week ago. Neither corrodors nor manufacturers of mixed Leads have been favored with other than retail sort of orders, and no particular effort to work up business has been undertaken, probably for the good and sufficient reason that endeavors in that direction are almost certain to be fruitless at this season of the year. The wholesale trade have been particularly backward pending information as to whether any revision of corrodors' prices would be made to go into effect at the beginning of the new year.

**Red Lead and Litharge.**—No large orders have yet been placed for Red Lead, although the prospects are considered favorable for a good trade soon in various Paints into which it enters prominently as an ingredient. In Litharge the business has been confined chiefly to the qualities used by glass manufacturers, some contracts for which are already in hand for next year's deliveries. The finer grade for painters' use is in very limited demand at present.

**Zincs.**—Some representatives of American Oxide manufacturers seem to be engaged in a contest of telling "whoppers" about the amount of business they have in hand, and a cynical observer would be apt to suggest that so much braggadocio is significant of something the reverse of the situation as represented. However, information from trustworthy sources goes to show that the manufacturers generally will start in upon the new year in very good shape. No changes in prices are announced.

**Colors, &c.**—Dry colors in general have found very limited sale. Current wants are light, since all classes of consumers are well supplied for the balance of the year, and contracts for future deliveries are by no means of remarkable character. Prices are comparatively low throughout, but steady.

**Miscellaneous.**—Nothing new has transpired in the market for Chalk, Whiting or Putty, and regarding Barytes and the

general line of Clays practically the same may be remarked.

## Oils and Turpentine.

Changes in the Oil market have been few and far between; not only that, but the few that have taken place caused barely a ripple upon the surface, for the reason, no doubt, that they were too slight to exert a more pronounced effect. Influences from which buyers or sellers can derive any particular satisfaction are conspicuous by their absence, and at present there are no signs of anything of a startling character coming to the surface in the immediate future. As natural under such circumstances, the operations of both export and home trade buyers are chiefly of a perfunctory character at the moment, yet the distribution in most lines appears to be well up to the average for this season of the year.

**Linseed Oil.**—Crushers experience a limited demand for their Oil in the Eastern markets and the reports that come in from other quarters afford no evidence that Western concerns are faring any better. The consumption, as a matter of fact, seems to be very light in all localities at the present time and there is little, if any, disposition to anticipate future wants even at present low prices. About the future of the market there seems still to be a great deal of uncertainty, but the indications are that prices will not improve a great deal during the next three months unless the conflicting interests come to some sort of an agreement. The prices now quoted for seed for May delivery are believed to be supported almost solely by the manipulations of speculators.

**Cotton Seed Oils.**—The feature in this line has been the anomaly of a further rise in the cost of crude product and a slight decline in that of the refined article. Thus, for prime crude 26¢ is now a common price (26½¢ was paid in one or two instances), against 25½¢ a week ago, while prime Summer Yellow is down to 29¢ @ 29½¢ and rather slow of sale at the decline. This condition of affairs is attributed to increase in the refining business at the South, that has the dual effect of reducing the shipments of crude Oil to the seaboard and giving a heavier supply of the refined product. There is, however, some reason to suspect that the contest between the two large concerns on one hand and the numerous "independents" on the other is not without effect. Transactions in crude during the week involve nearly 2000 barrels. Scarcity of freight room has checked export operations in refined, but one fair-sized lot was taken at 30¢, about 1250 barrels went at 29½¢ and 500 barrels at 29¢. On home trade account but little has been done in this market.

**Lard Oil.**—Some effort has been made to "boom" the market for prime Oil by bidding high prices for lots and deliveries that it was impossible to connect, and on the strength of this more or less misleading reports have gone broadcast. However, the market is firm on its merits. Western nor other outside pressers have sent any considerable quantity this way that was fully up to the standard, and local crushers have disposed of their product about as fast as it was turned out; 54¢ will yet buy City Prime.

**Miscellaneous.**—In prices of Sperm, Whale and Menhaden products no changes have taken place, and business in the several lines has been of strictly routine character. Cod Oil continues scarce and very firm. Coconut and Olive Oils are steady at last week's prices, but rather quiet.

**Spirits Turpentine.**—Prices have remained almost stationary throughout the week, but business has been of smaller volume, and the demand is rather slow at the present time. The range of value on wholesale quantities is 33½¢ @ 34½¢, as to style of package.



### Novelties in Skates.

Union Hardware Company, Torrington, Conn., New York office Tower & Lyon, 95 Chambers street, are introducing skates of new design, as shown in Figs. 1 and 2. The Donoghue racing skate, Fig. 1, was designed by Joseph F. Donoghue, Newburg, N. Y., who holds the distinguished position as the world's champion skater.

It is claimed that this style of extension skate gives absolute firmness and security, with ready adjustment, and that they are of superior quality and finish. The skate is made in two sizes, adjusted to all lengths from 8½ to 11½ inches, and in three styles of finish—polished, nickel plated and extra finished nickel plated. Owing to the unusual demands for the regular skates, but very few of these ex-

forged blade, now has the blade struck out of sheet steel and riveted to a malleable iron handle, resulting in a light and neat article. Good steel is used in the blades, it is stated, insuring good cutting qualities. Corn and tobacco hooks and band knives are made under the same patents. The corn hook is now made with a folding blade, adjustable at different angles. The band knife was placed on the

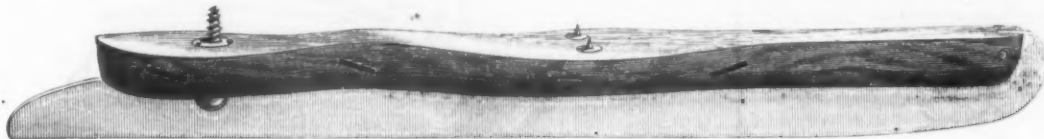


Fig. 1.—Donoghue Racing Skate.

Upon this style of skate he has won his laurels, which fact is a sufficient evidence of the adaptation of this somewhat peculiar skate to the work for which it is designed. J. F. Donoghue is now in the employ of the Union Hardware Company, and the skate is made under his personal supervision. The skate is made with mahogany tops, hardened steel runners and russet harness leather straps, with nickel tongue buckles. The steel used is

tension skates will be put upon the market this season.

### The Stanley Corrugated Hinge.

The Stanley Works, New Britain, Conn., and 79 Chambers street, New York, are putting on the market new styles of corrugated hinges, one of which is shown in the accompanying full size cut. These

market during the present year, and the demand has exceeded the expectations of the manufacturers.

### Rowing Frame and Chest Weight.

Merwin, Hulbert & Co., 26 West Twenty-third street, New York, are offering a rowing frame to be used in combination with a chest weight, as illustrated herewith. The frame has a rowing seat, making a most excellent rowing exercise. The chest weight is furnished with swivel

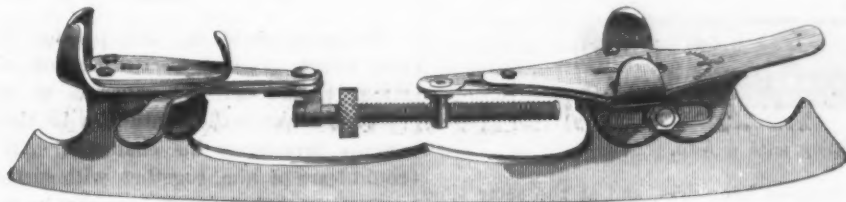
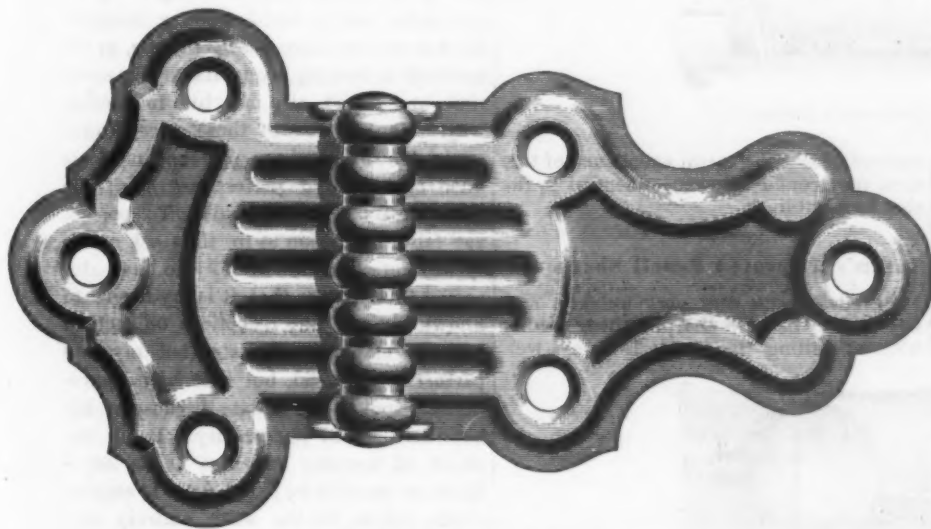


Fig. 2.—Extension All Clamp Skate.

exceedingly tough and is given a spring temper. They are made in three sizes, with runners 14, 16 and 18 inches long. The 16 and 18 inch are the most popular sizes. The manufacturers state that in quality and finish they are the best that can be produced, and that straps are used because Mr. Donoghue prefers this fastening to any of the modern arrangements of clamps, &c. The extension all-clamp skate, as shown in Fig. 2, is readily adjusted to the different sizes required, cov-

are made of corrugated polished brass, and are referred to as being very ornamental. The same hinge is made with two long flaps and also with two short flaps. Another style hinge is made like the cut with the exception of a ¼-inch offset in the short flap, designed for refrigerators. The manufacturers state that these patented hinges are entirely new and original in design, very handsome in appearance, and that the corrugations about the joint increases the strength and stiffness of the

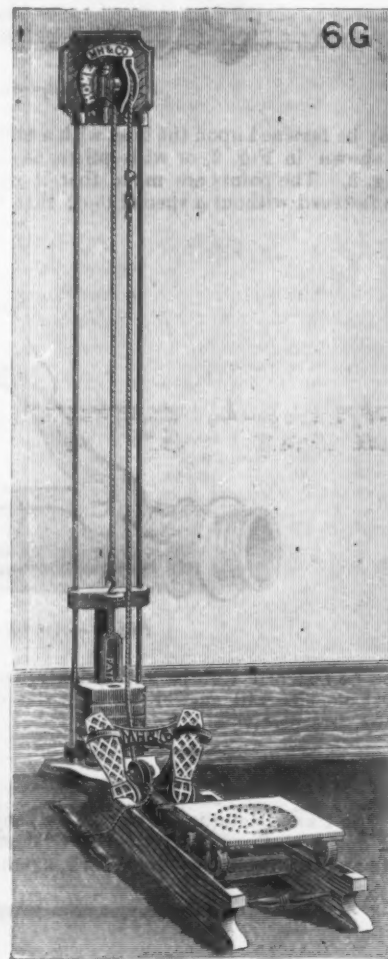


The Stanley Corrugated Hinge.

ering in two sizes of skates all the requirements which have hitherto been met by the usual assortment of eight different sizes, from 8½ to 12 inches. Plates extend on each side of the runner, under both the toe and heel clamps, whereby the skate may be shortened or lengthened, the plates being held in place by bolt and nut.

hinge to a surprising degree. The hinges are finished in plain polished brass, or in any of their special finishes, such as old copper, antique brass, &c.

The Brooks Hay Knife, manufactured by North Wayne Tool Company, Hallowsell, Maine, which was first made with a



Rowing Frame and Chest Weight.

self-lubricating noiseless pulley, and requires but 5 x 4 inches floor space. It is sold complete with 15 pound weights, adjustable from 5 pounds.

W. W. Lawrence & Co., Pittsburgh, Pa., refer to the linseed oil sold by them, bearing their brand, as warranted perfectly pure, well settled and in light barrels. The attention of the dealer and con-

sumer is called to the bad results sure to follow the sale or use of adulterated linseed oil, the consequences being far reaching; the painter whose work turns out badly, the dealer who furnishes bad material, both come in for blame and damaged reputation.

#### Bieder Hose Strap.

Cleveland Novelty Company, Cleveland, Ohio, the Ross & Fuller Association, general agents, 33 Chambers street, New York,



Fig. 1.—Bieder Hose Strap.

are offering the trade a hose strap, as illustrated in Fig. 1. It is made of a single brass wire, and is fully warranted to stand any pressure that may be put upon it. It



Fig. 2.—Applying Strap with a Nail.

may be fastened upon the hose with a nail, as shown in Fig. 2, or with pliers, as in Fig. 3. The points are made that it can be fastened without a special tool; that it

to investigate this matter exhaustively; and as a result of their experiments they have placed on the market the New Club Shell. In designing this new shell they have been careful to preserve all the feat-

pencil holder is of anti-friction metal, which saves the necessity of oiling, and the chuck is regulated by a screw with a milled head, thus accommodating any size pencil. In use the holder is pushed back-



Tatum's Improved Pencil Sharpener.

ures which have made their Club brand popular, and in addition to these they have embodied, among other improvements, a peculiar form of base, as illustrated in the cut, which they state will be found to aid materially in securing quickness of ignition and complete combustion of powder charge. The manufacturers claim that the use of this shell will obviate the annoyance of

ward and forward by means of the handle, and the length of the point of the pencil is varied by extending the pencil through the chuck. The manufacturers claim the sharpener will not break the lead when properly used, that it has no springs, and that it is simple in construction.

#### My Late Partner.

BY M. I. SHADOW.

The selection of my late partner was the result of mature deliberation on my part, and all the resources at my command were called into play to thoroughly investigate his character. All I could learn of him, together with surface indications, led me to believe that he was honest and honorable. I accepted his statement that he desired to engage in the retail Hardware business. After several years' experience in this line, I had accumulated sufficient capital to start half a store, hence my need of a partner. A mutual friend suggested our names to each other, and the matter of joining forces was taken under advisement. My proposed partner was head bookkeeper in a wholesale house, which was loth to give him up. After taking the precautions referred to, it took but a short time to arrange the preliminaries and to decide upon a location. He was not an entire stranger to me, as we had had a bowing acquaintance for some time, and I had also met him in a social way. He was one of those exceedingly genial fellows in whose presence one feels good natured and perfectly at ease; one that readily makes friends. To correct any false impression as to the lack of respect I entertain for those who have departed this life, or that it is my desire to knowingly cast any reflections on such, I wish to emphatically state that my late partner is not dead, but that he is appropriately spoken of as late because of his habitual lack of punctuality. Being desirous of keeping expenses at as low a figure as possible we decided not to employ clerks, but to do the work entirely ourselves. The division of labor naturally adjusted itself, he keeping the books and I doing the buying. We were, of course, both to interest ourselves in selling goods sweeping the store, cleaning lamps, washing windows, and all such necessary duties as fall to the lot of those who are entirely independent of help. We were for-

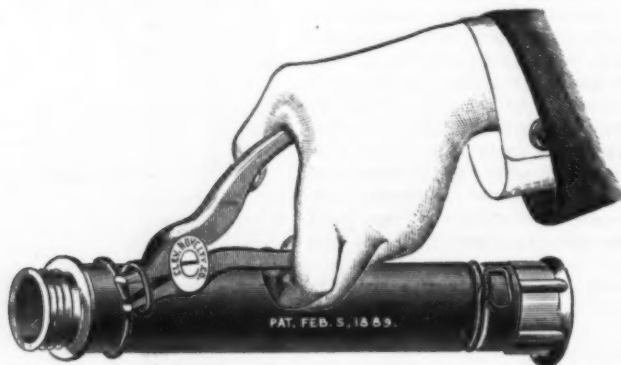


Fig. 3.—Applying Strap with Pliers.

can be fastened tightly and quickly, and that one size will answer for each size of hose, irrespective of ply.

#### New Club Paper Shot Shell.

The Union Metallic Cartridge Company, Bridgeport, Conn., Hartley & Graham, 313 and 315 Broadway, New York, agents,

#### Tatum's Improved Pencil Sharpener.

Pencils become dull very quickly, and any device that will sharpen them readily without soiling the hands is always wel-



New Club Paper Shot Shell.

are introducing a paper shell, as illustrated herewith. The constantly increasing demand for paper shot shells perfectly adapted for use with Nitro powders, such as Schultze, "S. S.," Am. Wood and "E. C.," as well as all black powders, led them

come to office men. The Samuel C. Tatum Company of Cincinnati, Ohio, are introducing the New Dollar Pencil Sharpener, a view of which is given in the accompanying cut. The base is nickel plated, and bears a flat steel file. The



tunate in creating a favorable impression in our new home, and our business proved all that could be expected for beginners. I did not fail to recognize the good qualities of my partner upon closer acquaintance, as they stood out the more clearly against the background of his defects. I may have been somewhat critical, but as his shortcomings affected me directly and personally, I could not be otherwise. He found it convenient to get to business in the morning after I had swept, put out the show goods and cleaned up generally. He was tardy in getting back from dinner and supper; and many times a day he would run out just for a minute, and return in an hour. I expostulated with him after I became convinced that his actions were premeditated, when he laughingly promised to reform. I felt considerable hesitation in taking him to task, as we had an equal monied interest in the business, and should have been equally interested in other respects. He proved to be an excellent salesman, social and obliging, but he never developed any aptitude for putting away goods. In fact, I could always tell what goods he had shown during my absence at meals by the accumulation of stock on the counters. When asked to assist in straightening up, he would betake himself to the books, or to wiping off the pocket cutlery, seeming to find much amusement and pleasure in the latter. I should not have been surprised to have found the polish all wiped off the blades of the pocket knives, so industriously did he employ himself in this direction. I always found him ready to lead the procession when any show was to be made, myself coming in for the work; he also preferred to sell a paper of tacks and let me cut a bar of iron for a blacksmith; in fact, I found in the course of time that he had numberless pleasant little ways of making himself disagreeable. Another point which was a constant source of solicitude on my part was the peristent manner in which he gave credit indiscriminately. His genial disposition, upon which I had counted so much, seemed to totally incapacitate him for refusing a request to "just charge this," even when he knew that the party was utterly unworthy of credit. When spoken to about the matter, he acknowledged that this policy would end in numerous bad accounts, but excused himself on the ground that he found it so hard to say no. He proved to be a better servant than master, for though considered an excellent bookkeeper in the position he had held, his posting was never up to date and we were obliged to look over the books whenever a customer called to pay his account. It is said one must travel with a person to know them, but I found that business association answered the same purpose. The climax was reached, during his protracted absence from the store on account of sickness, when it became necessary for me to bring the books up to date. The condition in which I found them, and the manner in which they had been kept, caused me to believe that his design was to keep me in ignorance of the condition of our

business. I was strengthened in this belief, because after he had figured up the inventory a short time before he was unable to find that any money had been made on the year's business. I felt almost confident at the time, from the amount of business we had been doing, that such was not the case; now I was certain of it. Upon his recovery and return to the store I accused him of deception, and rather than have any further disclosures made he agreed to withdraw from the firm, upon terms dictated by myself. I hardly need add that this ended my experience with partners; but I often wonder if other people who are apparently serene find their partners more congenial than mine proved to be.

## NEW PUBLICATIONS.

PROGRESSIVE EXAMINATION OF LOCOMOTIVE ENGINEERS AND FIREMEN. John A. Hill, author and publisher, New York. Price 50 cents.

This consists of a series of practical questions and answers, divided in three examinations, after one year's service, two years and three years as fireman. The author states in his explanatory address that so much of the examination of firemen for promotion to the responsible position of locomotive engineer is unsatisfactory on account of there being no proper system of training, and there is withal so much uncertainty as to what a man really knows, even after he has passed an examination, that the author of this plan has been encouraged to propose it. He claims no originality for the questions or answers, but has selected the simplest and best from every available source. The only original proposition is in using a series of progressive examinations to insure good material to start with, and aid and assist the fireman to learn the proper things first and provide a screen to prevent advancement of incompetents. Locomotive engine running is a vast responsibility and, therefore, the most painstaking care should be exercised in selecting and turning out men for this position. The author believes that the way to secure a good class of engineers is, first, to select good clean material, inspect for culls and have some quick and fairly accurate method of testing for such defects as would prevent the candidate from ultimately becoming a first-class passenger engineer. Second, provide the opportunity and means or point out the way, to the student to learn the rudiments of his business first—teach him how to fire before he goes head-over heels into valve motion. Third, provide an incentive to the learning of the right part first. By the method here proposed responsible officers can provide a system of periodical examination of firemen and advance them step by step until they become thoroughly proficient enginemen. The examination at the end of the first year covers the rudiments of the business, and is, therefore, of an elementary character. The second examination takes up the subject of fuel combustion, boilers and the duties of firemen. It insures his understanding something about the care of fires, draft appliances and economy of fuel. The third examination is a thorough one on the mechanism of the engine, brakes, &c. The examination requires a remedy or a cure for every conceivable break down liable to occur on the road, and this examination is intended to be complete enough to warrant the promoting of the successful fireman as needed. The author has been most happy in the selection of his questions, and has covered the ground in the best possible manner. The last few pages of the book contain diagrams illustrating the manner of using signals according to the standard code of train rules as adopted by the American Railway Association.

## CONTENTS.

	PAGE.
Problem for Inventors.....	1107
The Otto Gasoline Engine. Illustrated.....	1107
Waterways to the West.....	1107
Steel Car Axles.—IV.....	1108
Meeting of Machinery Makers.....	1109
The Drexel Institute.....	1109
Electric Reciprocating Engine. Illustrated.....	1110
Trade with Jamaica.....	1115
The Thomas Oscillating Steam Engine. II.....	1116
Blast Furnace Cinder Car. Illustrated.....	1117
The New Wire Mill at De Kalb, Ill.....	1117
World's Fair Notes.....	1118
Gang Punching Machine. Illustrated.....	1119
Smoke Abatement in Cities.....	1119
The Wickes Plate-Bending Rolls. Illus.....	1120
Trade Publications.....	1120
The Week.....	1121
American Tonnage in the Carrying Trade.....	1121
A Marine Railway Completed.....	1121
Editorials:	
The Lake Superior Ore Statistics.....	1122
National Waterways.....	1122
Steel for Pipe.....	1122
India's Experience with Silver.....	1123
Insurance on High Chicago Buildings.....	1123
Obituary.....	1123
The Record Mfg. Company.....	1124
Improvements at Edgar Thomson.....	1124
Chicago Electric Lighting.....	1124
The Cost of Tin Plate.....	1125
San Francisco News.....	1125
Cost of the Manchester Ship Canal.....	1126
Personal.....	1126
Manufacturing:	
Iron and Steel.....	1126
Machinery.....	1127
Hardware.....	1127
Miscellaneous.....	1127
Trade Report:	
Chicago.....	1128
Philadelphia.....	1129
Cincinnati.....	1129
New York.....	1130
Financial.....	1130
Coal Market.....	1131
Metal Market.....	1131
Cleveland.....	1131
Detroit.....	1131
Pittsburgh.....	1132
St. Louis.....	1133
British Iron and Metal Markets.....	1132
Imports.....	1133
Tin and Terne.....	1133
Use of Flux in Making Tin Plates.....	1133
Hardware:	
Condition of Trade.....	1134
Notes on Prices.....	1134
Trade Items.....	1135
Order Blank for Customers.....	1135
The Future of Wire Nails.....	1136
The Outlook for 1892.....	1137
Some Old Invoices. Illustrated.....	1137
Price-Lists, Circulars, &c.....	1138
It Is Reported.....	1138
Exports.....	1139
Paints and Colors.....	1140
Novelties in Skates. Illustrated.....	1141
The Stanley Corrugated Hinge. Illus.....	1141
Rowing Frame and Chest Weight. Illus.....	1141
Bieder Hose Strap. Illustrated.....	1142
New Club Paper Shot Shell. Illustrated.....	1142
Tatum's Improved Pencil Sharpener. Illus.....	1142
My Late Partner.....	1142
New Publications.....	1142
Current Hardware Prices.....	1143
Current Metal Prices.....	1150

# CURRENT HARDWARE PRICES.

DECEMBER 23, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

## Adjusters, Blind.

Domestic..... \$ dos \$3.00, 33¢  
Wheeler..... \$ dos \$10.00, 50¢  
Iron..... \$ list net \$105  
Zimmerman's—See Fasteners Blind.

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils.

Eagle Anvils, \$ 10¢..... 15¢  
Peter Wright's..... 11¢  
Armstrong's Mouse Hole..... 10¢  
Armstrong's Mouse Hole, Extra..... 12¢  
Trenton..... 10¢  
Wilkinson's..... 10¢  
Moore & Barnes Mfg. Co..... 33¢

## Anvil Vise and Drill.

Muller Falls Co., \$18.00..... 20¢  
Chester Anvil and Vise..... 25¢  
Allen Anvil and Vise, \$3.00..... 40¢  
Star..... 45¢

## Apple Parers—See Parers, Apple.

## Augers and Bits.

Douglas Mfg. Co..... 70¢  
Wm. A. Ives & Co..... 70¢  
Humphreysville Mfg. Co..... 70¢  
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)..... 70¢  
Rockford Bit Company..... 65¢  
Cook's, Douglas Mfg. Co..... 60¢  
Cook's, N. H. Copper Co..... 60¢  
Ives' Circular Lip..... 60¢  
Patent Solid Head..... 30¢  
C. E. Jennings & Co., No. 10, extension lip..... 40¢  
C. E. Jennings & Co., No. 30..... 60¢  
D. E. Jennings & Co., Auger Bits, \$ set, 33¢ quarters, No. 5, 85; No. 30, \$3.50, 20¢  
Lewis' Patent Single Twist..... 45¢  
Russell Jennings' Augers and Bits..... 25¢  
Imitation Jennings' Bits..... 60¢  
Fug's Black..... 20¢  
Car Bits..... 60¢  
Car Bits, P. S. & W. Co..... 60¢  
Snell's Car Bits..... 60¢  
L. Hommedieu Car Bits..... 15¢  
Forster Pat. Auger Bits..... 20¢  
Cincinnati Bell-Hangers' Bits..... 30¢

## Bit Stock Drills.

Morse Twist Drills..... 50¢  
Standard..... 50¢  
Cleveland..... 50¢  
Syracuse, for metal..... 50¢  
Syracuse, for wood (wood list)..... 30¢  
Cincinnati, for wood..... 30¢  
Cincinnati, for metal..... 45¢

## Expansive Bits.

Clarks' small, \$18; large, \$36, 35¢  
Ives' No. 4, \$ dos \$60..... 40¢  
Ives' No. 1, \$ dos \$100..... 40¢  
Steel's, No. 1, \$ dos \$100, No. 2, \$ dos \$100, No. 3, \$ dos \$100..... 35¢  
Stearns' No. 2, \$ dos \$100..... 20¢

## Gimlet Bits.

Common..... \$ gross \$2.75, \$2.25  
Diamond..... \$ dos \$1.10..... 25¢  
See Double Cut, Richardson's..... 45¢  
Double Cut, Ct. Valley Mfg. Co., 30¢  
Double Cut, Hartwell's, \$ gro..... 55¢  
Double Cut, Douglas..... 40¢  
Double Cut, Ives..... 60¢

## Hollow Augers.

Ives..... 33¢  
French, Swift & Co..... 35¢  
Douglas..... 35¢  
Bonney's Adjustable, \$ dos \$45..... 40¢  
Stearns'..... 30¢  
Ives' Expansive, each \$4.50..... 60¢  
Universal Expansive, each \$4.50..... 60¢  
Wood's..... 30¢  
Cincinnati Adjustable..... 25¢  
Cincinnati Standard..... 25¢

## Ship Augers and Bits.

L'Hommiedieu's..... 15¢  
Watrous..... 15¢  
Snell's..... 15¢  
Snell's Ship Auger Pat'n Car Bits, 15¢  
Snell's Ship Auger Pat'n Car Bits, 15¢

## Awl Hafta—See Hafta, Awl.

## Awls.

Awls, Sewing, Common \$ gr. 8 @ 9¢  
Awls, Should, Peg..... \$ gr. 1.50, 1.55  
Awls, Pat. Peg..... \$ gr. 25¢, 25¢  
Awls, Shouldered Brad..... \$ gr. 1.50, 1.55  
Awls, Handled Brad..... \$ gr. 2.50, 2.50  
Awls, Handled Scratch..... \$ gr. 4.00, 4.00  
Awls, Socket Scratch..... \$ dos \$1.10, \$1.20

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes.

First quality, best brands, \$7.00 @ \$7.50  
First qual., other brands..... 6.50  
Second quality..... 6.00

## Axle Grease—See Grease, Axle.

## Axles.

No. 1, 4¢, No. 2, 5¢, No. 3, 6¢  
Nos. 7 to 14..... 55¢  
Nos. 15 to 18..... 47¢  
Nos. 19 to 22..... 70¢  
Concord Axles, loose collar..... 60¢  
Concord Axles, solid collar..... 60¢  
National Taper Self-Oiling..... 35¢

## Bag Holders—See Holders, Bag.

## Balances.

Spring Balances..... 40¢  
No. 3000 20 30  
Chatillon, \$ dos..... \$0.80 0.95 1.75 net  
Chatillon Straight Balances..... 40¢  
Chatillon Circular Balances..... 50¢

## Barb Wire—See Wire, Barb.

## Bars.

Crow..... \$ dos \$3.00, 33¢  
Cast Steel..... \$ dos \$10.00, 50¢  
Iron, Steel Points..... \$ dos \$105

## Basins, Wash.

Standard Fiberware, No. 1, 10½-inch, \$3; 12-inch, \$2.25; 13½-inch, \$2.75; 15-inch, \$3.25.

## Beams, Scale.

Scale Beams, List Jan. 12, '82..... 50¢  
Chatillon's No. 1..... 50¢  
Chatillon's No. 2..... 40¢  
Custer's..... 35¢

## Benders.

## Egg.

Dover..... \$ dos \$1.50  
Duplex (Standard Co.)..... \$ dos \$1.25  
Rival (Standard Co.)..... \$ dos \$1.00  
Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50

## Bryant's.

Double (H. & R. Mfg. Co.), \$ gro. No. 1, \$12.00; No. 2, \$15.00; No. 3, \$18.00  
Kasy (H. & R. Mfg. Co.)..... \$ gro \$12.00  
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50  
Spiral..... \$ gro \$4.25 @ 4.50  
Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00

## Paine, Diehl & Co.'s.

Silver & Co. (F. H. Beecher, P. S. & W. Co.)..... \$ dos \$5.50

## Keystone, P.D. & Co., Each, No. 1, \$1; No. 2, \$2.

## Bells.

## Cow.

Common Wrought..... 60¢  
Western, Sargent's list..... 70¢  
Kentucky, "Star"..... 70¢  
Kentucky, Sargent's list..... 70¢  
Kentucky Durham..... 70¢  
Dodge, Genuine Kentucky..... 70¢  
Texas Star..... 50¢

## Gong, Abbe's.

Gong, Yankee..... 45¢  
Gong, Barlow's..... 45¢  
Crane, Taylor's..... 25¢  
Crane, Brooks'..... 50¢  
Crane, Cone's..... 40¢  
Crane, Connel's..... 40¢  
Lever, Sargent's..... 60¢  
Lever, Taylor's Bronzed or Plated..... 60¢  
Lever, Taylor's Japaned..... 60¢  
Lever, R. E. M. Co.'s..... 60¢  
Pull, Brook's..... 60¢

## Electric.

Wollensak's..... 30¢  
Bigelow & Dowse..... 30¢  
Taylor's..... 30¢

## Head.

Light Brass..... 70¢  
Extra Heavy..... 70¢  
White..... 70¢  
Silver Chime..... 35¢  
Globe Cone's Patent..... 25¢

## Miscellaneous.

Call..... 40¢  
Farm Bell..... \$ 2.50, 2.50  
Steel Alloy Church and School Bells..... 40¢

## Bellows.

Blacksmiths'..... 60¢  
Molders'..... 40¢  
Hand Bellows..... 40¢

## Belting, Rubber.

Common Standard..... 70¢  
Standard..... 70¢  
Extra..... 60¢  
N.Y.B. & P. Co., Carbon..... 60¢  
N.Y.B. & P. Co., Diamond..... 60¢  
N.Y.B. & P. Co., Para..... 40¢

## Bench Stops—See Stops, Bench.

## Benders and Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..... 15¢  
Detroit Perfected Tire Bender..... 15¢

## Bits.

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks.

Ordinary Tackle, list May 20, 1889..... 70¢  
Cleveland Block Co., Mal. Iron..... 50¢  
Moore's Novelty, Mal. Iron..... 50¢  
Sure Grip Steel Tackle Blocks..... 25¢

## Boards, Steel.

Wood Lined Crystal..... 50¢  
Oxidized..... 45¢  
Embossed..... 50¢  
Paper Lined Zinc..... 55¢  
Embossed..... 55¢  
New Tacoma..... 55¢

## Belts.

Carrington, Machine, &c..... 70¢  
Com. list June 10, '84..... 70¢  
Genuine Eagle, Norway, list Oct., '84..... 80¢  
R.B. & W. old list..... 70¢  
Machine, list Jan. 1, 1890..... 70¢

## Bolt Ends, list Jan. 1, 1890.

75¢  
75¢  
75¢

## Door and Shutter.

Cast Iron Barrel Square, &c..... 70¢  
Cast Iron Shutter, Sargent's list..... 65¢  
Ives' Patent Door Bolts..... 60¢  
Wrought Barrel..... 70¢  
Wrought Square..... 70¢  
W.R. Shutter, all Iron, Stanley's..... 60¢  
W.R. Shutter, Brass Knob..... 60¢  
W.R. Shutter, Sargent's list..... 65¢  
W.R. Sunk Flush, Sargent's list..... 65¢  
W.R. Sunk Flush, Stanley's list..... 60¢  
W.R. B.K. Flush, Com'n..... 55¢

## Stove and Flow.

Stove..... 60¢  
Flow..... 60¢  
R. B. & W. Flow..... 55¢

## Tire.

Common, list Feb. 23, '83..... 65¢  
Port Chester Bolt and Nut Company:

Empire, list Feb. 23, '83..... 65¢  
Keystone, Philadel., list Oct., '84..... 80¢  
Norway, Phila., list Oct., '84..... 75¢  
American Screw Company:

Norway, Phila., list Oct., '84..... 75¢  
Eagle, Phila., list Oct., '84..... 80¢  
Philadel., list Oct., '84..... 80¢  
Ray State, list Feb. 23, '83..... 65¢  
R.B. & W., Philadel., list Oct., '84..... 80¢

## Borers, Tap.

Common and Ring..... 20¢  
Ives' Tap Borer..... 35¢  
Enterprise Mfg. Co..... 20¢  
Clark's..... 35¢

## Boring Machines—See Machines, Boring.

## Bow Pins—See Pins, Bow.

## Boxes, Wagon.

Per b..... 2¢

## Braces.

American Bit Brace Co.:

Nos. 10, 12, 20..... 60¢  
Nos. 11, 21, 24, 27..... 70¢  
Nos. 22, 23, 25..... 60¢  
Nos. 13, 26, 37..... 70¢  
Ball braces, net..... \$1.12 to \$1.35

## Amidon's.

Barker's Imp'd Plain..... 75¢  
Barker's Imp. Nickle..... 65¢  
Barker's Imp. Nickel..... 75¢  
Eclipse Ratchet..... 60¢  
Globe Jawed..... 40¢  
Corner Brace..... 40¢  
Universal, 5 in., \$2.10; 10 in., \$2.25  
Buffalo Ball..... \$1.10 @ \$1.15

## Barber's.

Nos. 10 to 16..... 60¢  
Nos. 30 to 33..... 60¢  
Nos. 40 to 63..... 60¢

## Ston's.

Barker's Imp. Polished..... 75¢  
Barker's Imp. Nickel..... 65¢  
Barker's Imp. Nickel..... 75¢  
Ratchet, Polished..... 60¢  
Ratchet, Nickel..... 40¢  
Buffalo Ball..... net, \$1.10 @ \$1.15

## Bartholomew's.

Nos. 25, 27 and 30..... 50¢  
Nos. 117, 118, 119..... \$1.00 @ \$1.10

## Common Ball, American.

Fray's Genuine Spotted's..... 50¢  
Fray's No. 70 to 130, 81 to 123, 207 to 414..... 50¢

## Ives' New Haven Novelty.

New Haven Ratchet..... 60¢  
New Haven Ratchet..... 60¢  
Barber's..... 60¢  
Sporford's..... 60¢  
Osgood's Ratchet..... 40¢  
P. S. & W. Co., Peck's Patent..... 60¢

## Brackets.

Shelf, plain..... 65¢  
Regular list..... 65¢  
Sargent's list..... 65¢  
Shelf, fancy..... 65¢  
Sargent's list..... 65¢  
Other makes at a wide range of prices.

## Bright Wire Goods—See Wire.

## Broilers.

Hens' Self-Inch..... 9 10 9x11  
Basting..... \$4.50 5.50 6.50  
New Haven..... 60¢  
Wire Goods Co..... 65¢  
Morgan Odorless..... \$ dos \$12, 33¢

## Buckets, Well.

Galvanized..... 70¢  
Hill's..... \$ dos, 12 qt, \$4.25; 14 qt, \$5.25  
Iron Clad..... \$ dos, 14 qt, \$4.25; 16 qt, \$5.25  
Helwig's Flat Iron Band..... \$5.75  
Helwig's Wired Top..... \$ dos \$4.00

## Bull Rings—See Rings, Bull.

## Butchers' Cleavers—See Cleavers Butchers'.

## Butts.

Brass..... 75¢  
Wrought..... 75¢  
Cast Brass, Tiebout's..... 60¢  
Cast Brass, Fast..... 35¢  
Cast Brass, Loose Joint..... 35¢

## Cast Iron.

Fast Joint, Narrow..... 50¢  
Fast Joint, Broad..... 60¢  
Loose Joint..... 50¢  
Loose Joint, Jap. with Acorns..... 50¢  
Parliament Butts..... 70¢  
Loose Pin, Acorns..... 70¢  
Loose Pin, Acorns, Japanned, Plated Tips..... 70¢

## Wrought Steel.

Fast Joint, Narrow..... 70¢  
Fast Joint, Lt. Narrow..... 70¢  
Fast Joint, Broad..... 70¢  
Table Butts, Back Flaps, &c..... 70¢  
Inside Blind, Regular..... 70¢  
Inside Blind, Light..... 70¢  
Loose Pin..... 70¢  
Bronzed Wrought Butts..... 50¢

## Callipers—See Compasses.

## Calks, Tee.

Gautier, One Prong, Blunt..... 5¢  
Burke's, One Prong, Blunt..... 5¢  
Burke's, Two Prong, Blunt..... 5¢  
Burke's, One Prong, Sharp..... 5¢

## Can Openers—See Openers, Can.

## Caps.

Perussion, \$ 1000—

Hicks & Goldmark's and Union Metallic Cartridge Co.

F. L. Waterproof, 1-10's..... 35¢  
E. R. Trimmed Edge, 1-10's..... 47¢  
E. R. Grad. Edge, Cent. Fire, 1-10's..... 47¢

Stanket Waterproof, 1-10's..... 47¢  
G. D..... 47¢  
S. B. Genuine Imported..... 47¢  
Kley's E. R..... 55¢  
Kley's D Waterproof, Central Fire..... 31¢

## Primers.

Berdan Primers, \$1.00..... 25¢  
B. L. Caps (for Sturtevant Shells) \$1.00..... 25¢

All other Primers, \$1.20..... 25¢

## Cards—List January 23, 1891.

Watson's Cotton, Wool, Horse and File..... 25¢

## Carpet Stretchers—See Stretchers, Carpet.

## Carpet Sweepers—See Sweepers, Carpet.

## Cartridges.

Blm Fire Cartridges..... 50¢  
Blm Fire Military..... 50¢  
Cent. Fire, Pistol and Rifle..... 25¢  
Cent. Fire, Military and Sporting..... 15¢

Blank Cartridges, except 22 and 32 cal., additional 10¢ on above discounts.

Blank Cartridges, 22 cal., \$1.75..... 2¢  
Blank Cartridges, 32 cal., \$3.50..... 2¢  
Primed Shells and Bullets..... 15¢  
S. B. Caps, Round Ball, \$1.75..... 2¢  
S. B. Caps, Con. Ball, Sward, \$2.00..... 25¢

## Casters.

Bed..... 65¢  
Plate..... 65¢  
Shallow Socket..... 65¢  
Deep Socket..... 40¢  
Yale Casters, list May, 1884..... 30¢  
Yale, Gem..... 40¢  
Martin's Patent (Phoenix)..... 40¢  
Payson's Anti-friction..... 70¢  
Payson's Truck..... 0¢  
Great Truck Casters..... 50¢  
Stationary Truck Casters..... 50¢  
Socket Truck Casters..... 50¢

## Cattle Loaders—See Loaders, Cattle.

## Cement.

Victor Elastic..... 5 b pails \$ 5¢

## Chain.

Trace, Wagon and Fancy Chains. List revised April 21, 1890..... 60¢

American Coil, in cast lots, 3-16 5-16 7-16 9-16 11-16 13-16 15-16 17-16 19-16 21-16 23-16 25-16 27-16 29-16 31-16 33-16 35-16 37-16 39-16 41-16 43-16 45-16 47-16 49-16 51-16 53-16 55-16 57-16 59-16 61-16 63-16 65-16 67-16 69-16 71-16 73-16 75-16 77-16 79-16 81-16 83-16 85-16 87-16 89-16 91-16 93-16 95-16 97-16 99-16 101-16 103-16 105-16 107-16 109-16 111-16 113-16 115-16 117-16 119-16 121-16 123-16 125-16 127-16 129-16 131-16 133-16 135-16 137-16 139-16 141-16 143-16 145-16 147-16 149-16 151-16 153-16 155-16 157-16 159-16 161-16 163-16 165-16 167-16 169-16 171-16 173-16 175-16 177-16 179-16 181-16 183-16 185-16 187-16 189-16 191-16 193-16 195-16 197-16 199-16 201-16 203-16 205-16 207-16 209-16 211-16 213-16 215-16 217-16 219-16 221-16 223-16 225-16 227-16 229-16 231-16 233-16 235-16 237-16 239-16 241-16 243-16 245-16 247-16 249-16 251-16 253-16 255-16 257-16 259-16 261-16 263-16 265-16 267-16 269-16 271-16 273-16 275-16



**Clamps—**

R. I. Tool Co.'s Wrought Iron.....	25¢
Adjustable, Cincinnati.....	15¢10¢
Adjustable, Hammers.....	15¢
Adjustable, Stearn's.....	30¢40¢10¢
Stearn's Adjustable Cabinet and Cor- ner.....	30¢40¢10¢
Cabinet, Sargent's.....	60¢40¢10¢
Carriage Makers', Sargent's.....	70¢10¢
Carriage Makers', P. S. & W. Co.....	40¢10¢
Eberhard Mfg. Co.....	40¢45¢40¢10¢
Warner's.....	40¢10¢40¢10¢45¢
Saw Clamps, see Vices, Saw Filers.....	
Carpenters', Cincinnati.....	55¢10¢

**Cleavers.**

<b>Butchers'.</b>	
Bradley's.....	35¢30¢
L. & J. White.....	20¢45¢
Beatty's.....	40¢40¢45¢
New Haven Edge Tool Co.'s.....	40¢
P. S. & W.....	35¢45¢35¢40¢10¢
Poster Bros.....	30¢
Schulte, Lohoff & Co.....	40¢40¢45¢

**Clips—**

Norway, Axle, 1/4 & 5-16.....	55¢55¢55¢
2nd grade Norway Axle, 1/4 & 5-16.....	65¢55¢
Superior Axle Clips.....	60¢45¢70¢
Norway Spring Bar Clips, 5-16.....	60¢45¢55¢
Wrought-Iron Felice Clips.....	5¢ 5¢4¢
Steel Felice Clips.....	5¢ 5¢4¢
Baker Axle Clips.....	25¢

**Cloth and Netting, Wire—See Wire, &c.**

**Cocks, Brass.**

**Hardware List.....** 50¢25¢

**Coffee Mills—See Mills, Coffee**

**Collars, Dog, &c.**

Madford Fancy Goods Co.....	40¢10¢
Embossed, Gift, Pope & Steven's list.....	30¢10¢
Leather, Pope & Steven's list.....	40¢
Brass, Pope & Steven's list.....	40¢
Chapman Mfg. Company.....	50¢10¢60¢

**Combs, Curry.**

Fitch's.....	50¢10¢60¢10¢10¢
Rubber, per doz.....	10¢00¢
American Curry Comb Co., New prices in preparation.	

**Compasses, Dividers, &c.—**

Compasses, Calipers, Dividers, 70¢70¢10¢	
Bemis & Call Co.'s	
Dividers.....	60¢45¢
Compasses & Calipers.....	50¢45¢
Wing and Inside or Outside.....	50¢45¢
Double.....	60¢
(Call's Pat. Inside).....	30¢
Excelsior.....	50¢
J. Stevens & Co.'s.....	55¢10¢
Starratt's	
Spring Calipers and Dividers.....	55¢10¢
Lock Calipers and Dividers.....	25¢
Combination Dividers.....	25¢

**Coopers' Tools—See Tools, Coopers'.**

**Cord—**

<b>Sash.</b>	
Common.....	10¢ 10¢ 11¢
Patent, good quality.....	12¢ 12¢ 12¢
White Cotton Braided, fair.....	24¢45¢
Common Russia Sash.....	12¢13¢45¢
Patent Russia Sash.....	14¢
Cable Laid Italian Sash.....	21¢45¢
India Cable Laid Sash.....	12¢ 12¢
<b>Silver Lace—</b>	
A Quality, White, 50s.....	25¢
A Quality, Drab, 50s.....	25¢
B Quality, White, 30s.....	10¢
B Quality, Drab, 30s.....	10¢
Sylvan Spring, Extra Braided White, 34s.....	34¢
Sylvan Spring, Extra Braided, Drab, 30s.....	30¢
Semper Idem, Braided, White.....	30¢
Egyptian, India Hemp, Braided.....	20¢
Massachusetts, White.....	20¢
<b>Samson—</b>	
Braided, White Cotton, 50s.....	30¢30¢45¢
Braided, Drab Cotton, 50s.....	30¢30¢45¢
Braided, Italian Hemp, 50s.....	30¢30¢45¢
Braided, Linen, 80s.....	30¢30¢45¢
Tate's Cotton Braided, White, P. D. 284, 10s.....	
<b>Wire Picture.</b>	
Braided or Twisted.....	75¢10¢

**Corkscrews—See Screws, Cork.**

**Corn Knives and Cutters—See**

**Knives, Corn.**

**Crackers, Nut—**

Table (H. & B. Mfg. Co.).....	40¢
Blake's Pattern.....	5¢ dos \$2.00, 10¢
Turner & Seymour Mfg. Co.....	50¢

**Cradles—**

Grain.....	10¢5¢45¢50¢10¢25¢
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**Crayons.**

White Crayons, 7 gross.....	10¢
D. M. Stewart Mfg. Co., Metal Work- ers, 7 gr, \$2.50.....	25¢
D. M. Stewart Mfg. Co., Rolling Mill, 7 gr, \$2.50.....	25¢
See also Chalk.	

**Crow Bars—See Bars, Crow.**

**Curry Combs—See Combs, Curry.**

**Curtain Pins—See Pins, Curtain.**

**Cutters—**

**Meat.**

Dixon's 7 dos.....	40¢25¢
Nos.....	1 2 3 4
	\$1.00 \$1.70 \$1.90 \$2.00
Woodruff's 7 dos.....	40¢25¢
Nos.....	100 150
	\$15.00 \$18.00
Hales Pattern 7 dos.....	70¢70¢25¢
Nos.....	11 12 13
	\$27.00 \$33.00 \$45.00
American.....	50¢
Nos.....	1 2 3 4 5 6
Each.....	\$5 \$7 \$10 \$25 \$50 \$60
Enterprise.....	30¢
Nos.....	10 12 13 22 25 45
Each.....	\$3 \$2.50 \$4 \$8 \$15
Great American Meat Cutter.....	30¢
Nos.....	112 116 118 120 122
Each.....	\$2.00 \$2.75 \$3.00 \$2.50 \$4.00
Miles' Challenge 7 dos.....	45¢45¢10¢
Nos.....	1 2 3 4 5
	\$22.00 \$30.00 \$40.00
Home No.....	7 dos \$26.00, \$44.10¢

**Draw Cut, each:**

Nos.....	1 2 3 4
	\$50 \$75 \$90 \$225
Beef Shavers (Enterprise).....	30¢10¢30¢
Little Giant (P. S. & W. Co.).....	50¢
Chadborn's Smoked Beef Cutter, 7 dos.....	\$26.00

**Tobacco.**

Champion.....	20¢10¢30¢
Wood Bottom.....	5¢ dos \$5.00 \$5.25
All Iron.....	5¢ dos \$4.25
Nashua Lock Co.'s.....	5¢ dos \$18.00 50¢55¢
Wilson's.....	5¢ dos \$24 50¢10¢
Sargent's.....	5¢ dos \$20.00 40¢
Acme.....	5¢ dos \$20.00 40¢

**Washer.**

Smith's Pat.....	5¢ dos \$12.00 20¢10¢10¢
Johnson's.....	5¢ dos \$11.00, 33¢4¢
Penny's.....	5¢ dos \$14, \$16.00, 55¢
Appleton's.....	5¢ dos \$10.00, 30¢10¢
Bonney's.....	30¢10¢
Cincinnati.....	25¢10¢

**Dampers, &c—**

Dampers, Buffalo.....	40¢10¢
Buffalo Damper Clips.....	40¢10¢
Crown Damper.....	40¢
Excelsior.....	40¢10¢

**Diggers, Post Hole, &c.—**

Samson Post Hole Digger, 7 dos \$36.00.....	25¢
Fletcher Post Hole Augers, 7 dos \$36, 20¢	
Eureka Diggers.....	5¢ dos \$12.50 \$14.00
Lead's.....	5¢ dos \$8.00 \$9.00
Vaughan's Post Hole Auger, 7 dos \$60.00.....	\$12.00 \$14.00
Kohler's Little Giant.....	5¢ dos \$18.00
Kohler's Hercules.....	5¢ dos \$17.00
Kohler's New Champion.....	5¢ dos \$18.00
Schledler.....	5¢ dos \$12.00
Ryan's Post Hole Diggers.....	5¢ dos \$24.00
Cromk's Post Bars, 7 dos \$60.00.....	50¢45¢50¢10¢
Gibbs Post Hole Digger, 7 dos \$30.00, 50¢	
Imperial, 7 dos \$15.....	45¢

**Dividers—**

**See Compasses.**

**Dog Collars—See Collars, Dog, &c.**

**Door Springs—See Springs, Door.**

**Drawers.**

Money, 7 dos.....	\$124 \$200
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**Drawing Knives—See Knives, Drawing.**

**Drills and Drill Stocks—**

Blacksmiths'.....	each \$1.75
Blacksmiths' Self-Feeding, each.....	\$7.50, 20¢
Breast, P. S. & W.....	40¢10¢
Breast, Wilson's.....	30¢25¢
Breast, Millers Falls.....	each \$3.00, 25¢
Breast, Bartholomew's.....	each \$2.50, 25¢
Ratchet, Merrill's.....	30¢20¢5¢
Ratchet, Ingersoll's.....	30¢20¢5¢
Ratchet, Parker's.....	30¢20¢5¢
Ratchet, Whitney's.....	30¢20¢5¢
Ratchet, Weston's.....	30¢20¢5¢
Ratchet, Moore's Triple Action.....	30¢20¢5¢
Ratchet, Curtis & Curtis.....	30¢
Whitney's Hand Drill, Plain, \$11.00.....	Adjustable, \$12.00.....
Wilson's Drill Stocks.....	10¢
Automatic Boring Tools.....	\$1.75 \$41.85
<b>Twist Drills—</b>	
Morse.....	50¢10¢25¢
Standard.....	50¢10¢25¢
Syracuse (Metal list).....	50¢10¢
Cleveland.....	50¢10¢25¢
Williams.....	50¢10¢10¢
New Process.....	50¢10¢25¢
Graham's Pat. Groove Shank.....	50¢10¢25¢
Diamond, W. & B.....	50¢10¢25¢

**Drill Bits or Bit Stock Drills—**

**See Augers and Bits.**

**Drill Chucks—See Chucks.**

**Dripping Pans—See Pans, Dripping.**

**Drivers, Screw.**

Douglas Mfg. Co.....	30¢20¢10¢
Diston's.....	50¢
Buck Bros.....	30¢
Stanley R. & L. Co.'s	
Varnished Handles.....	65¢10¢
Black Handles.....	60¢10¢
Sargent & Co.'s	
No. 1 Forged Blade.....	60¢10¢10¢
Nos. 20, 30 and 60.....	60¢40¢10¢10¢
P. S. & W.....	70¢
Knapp & Cowles.....	60¢20¢70¢
No. 1.....	60¢10¢10¢70¢25¢
No. 2.....	60¢10¢10¢70¢25¢
No. 3.....	60¢10¢10¢70¢25¢
Nos. 4 and 60, Acme and Ideal.....	50¢
Stearns.....	50¢10¢25¢
Gay & Parsons.....	25¢
Champion.....	25¢10¢
Clark's Pat.....	30¢35¢45¢
Crawford's Adjustable.....	30¢
Elrich's Socket and Ratchet.....	30¢40¢10¢
Allard's Spiral, new list.....	25¢
Kohl's Common Sense 7 dos \$4.00, 35¢10¢	
Syracuse Screw-Driver Bits.....	30¢30¢25¢
Screw-Driver Bits.....	5¢ dos 50¢75¢
Screw-Driver Bits, Parr's.....	7 gr \$2.25
Fray's Hol. Hds. Sets. No. 3.....	\$12.00, 60¢
P. D. & Co.'s all Steel.....	50¢
Cincinnati.....	25¢10¢
Brace Screw Drivers.....	25¢10¢
Buck Bros' Screw-Driver Bits.....	

**Egg Beaters—See Beaters, Egg.**

**Egg Poachers—See Poachers, Egg.**

**Electric Bell Sets—See Bells, Elec-  
tric.**

**Emery.—No. 4 to No. 54 to Flour, CF**

46 gr.....	150 gr.....	P. F. F.
Kegs, 7 dos.....	4¢6¢	5¢ 2¢4¢
4 kegs, 7 dos.....	5¢4¢	5¢4¢
4 kegs, 7 dos.....	5¢4¢	5¢4¢
10-b cans, 10.....		
In case.....	5¢ 6¢4¢	5¢
10-b cans, loss.....		
than 10.....	10¢	10¢

**Enameled and Tinned Ware—**

**See Ware, Hollow.**

**Escutcheon Pins—See Pins, Es-  
cutcheon.**

**Escutcheons.**

**Door Lock..... Same dis as Door Locks.**

**Brass Thread.....** 60¢60¢10¢

**Wood.....** 25¢

**Expanded Metal.**

**List No. 5.**

Lathing.....	10¢
Fencing, Painted Sheets.....	20¢
Netting, Painted Sheets.....	30¢
Door Mats, Galvanized.....	25¢
Window Guards, Painted.....	15¢
Tree Guards, Painted.....	15¢

**Extractors, Lemon Juice—See**

**Squeezers, Lemon.**

**Fasteners, Blind—**

Mackrell's, 7 dos \$1.00.....	20¢20¢10¢
Van Sand's Screw Pat., \$15 gr.....	60¢10¢
Van Sand's Old Pat., \$15.00 gr.....	55¢10¢
Austin & Eddy No. 2008 7 gr.....	40¢00¢
Securum Gravity, 7 gr.....	30¢00¢
Zimmerman's.....	45¢

**Faucets.—**

Fenn's.....	40¢
Bohren's Pat. Rubber Ball.....	25¢
Fenn's Cork Stops.....	35¢4¢
Star.....	60¢
Fenn's Pat. Petroleum.....	40¢5¢25¢
B. & L. Co.....	
West's Lock, Open and Shut Key.....	50¢
Star, Metal Plug, New list.....	40¢
Lockport, Metal Plug, reduced list.....	40¢
Metallic Key, Leather Lined.....	60¢10¢
Cork Lined.....	70¢25¢70¢10¢
Burnside's Red Cedar.....	50¢
Burnside's Red Cedar, bbl lots.....	50¢10¢
John Sommers.....	
Peerless Best Block Tin Key.....	40¢
LXL, list quality, Cork Lined.....	50¢
Diamond Lock.....	40¢
Goodenough, Fla. Red Cedar.....	50¢
Goodenough Cedar.....	50¢
Boss Metallic Key.....	50¢
Reliable Cork Lined.....	60¢
Western Pattern Cork Lined.....	50¢
Enterprise, 7 dos \$33.00.....	30¢10¢
Lane's, 7 dos \$36.00.....	25¢10¢
Victor, 7 dos \$36.00.....	25¢10¢

**Felice Plates—See Plates, Felice.**

**Fifth Wheels.—**

**Derby and Cincinnati.....** 45¢25¢

**Brewster.....** 50¢25¢

**Files—**

**Domestic—**

Nicholson Files, Rasps, &c.....	60¢10¢60¢10¢25¢
Nicholson (X. F.) Files.....	25¢
Nicholson's Royal Files (Seconds).....	75¢
(extra prices on certain sizes)	
G. & H. Barnett (Black Diamond).....	60¢10¢60¢10¢45¢
Eagle.....	60¢10¢25¢60¢10¢10¢
Other makers, best brands.....	60¢10¢25¢
Fair brands.....	60¢10¢10¢70¢25¢
Second quality.....	70¢10¢75¢10¢
Heller's Horse Rasps.....	50¢7¢40¢10¢
Cochran's Horse Rasps.....	50¢10¢
Chester Horse Rasps, Hand Out.....	50¢10¢

**Imported—**

**Butcher's.....** Butcher's list, 20¢

**Stubs.....** Stubs list, 25¢30¢

**Fixtures.**

**Grindstone—**

Sargent's Patent.....	70¢10¢
Reading Hardware Co.....	80¢10¢
P. S. & W. Co.....	50¢10¢

**Fluting Machines—See Machines,  
Fluting.**

**Fluting Scissors—See Scissors,  
Fluting.**

**Fodder Squeezers—See Squeezers,  
Fodder.**

**Forks—**

**Hay, Manure, &c., Asso List, 65¢25¢65¢10¢**

**Hay, Manure, &c., Phila. List, 60¢60¢25¢**

**Plated, see Spoons.**

**Frames—**

**Hangers—**

Barn Door, old patterns.....	60x10x10@70x
Barn Door, New England.....	60x10x10@70x
Barnon Steel Anti-Friction.....	55x
Orleans Steel.....	55x
Hamilton Wrought Wood Track.....	55x
U. S. Wood Track.....	55x
Champion.....	60x10x5
Blair and Wooster, Medina Mfg. Co.'s List.....	70x
Jimax Anti-Friction.....	55x
Climax Anti-Friction for Wood Track.....	55x
Zenith for Wood Track.....	55x
Good's Steel Arm.....	50x
Challenge, Barn Door.....	50x
Sterling.....	50x50x10x
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	60x2x
Chlorine.....	50x10x
Kidder's.....	50x10x60x
Boss.....	60x10x
Best Anti-Friction.....	60x10x
Duplex (Wood Track).....	60x10x5
Terry's Pat., 7/8 doz pr. 4 in., \$10.00; 5 in. \$12.00.....	50x10x
Terry's Steel Anti-Friction Leader.....	50x10x
Terry's Steel Anti-Friction Ideal.....	50x10x
Dronk's Patent, Steel Covered.....	50x5x
Wood Track Iron Clad, 7/8 ft. 10x.....	60x
Carrier Steel Anti-Friction.....	50x10x
Architect, 7/8 set \$6.00.....	30x
Scipio.....	30x10x
Felix, 7/8 set \$4.50.....	30x
Richards.....	30x
Lane's Standard.....	50x50x10x
Lane's New Standard.....	50x50x5x
Lane's Parlor.....	40x
Ball Bearing Door Hanger.....	30x10x25x10x
Warner's Pat.....	20x10x20x10x10x
Stearns' Anti-Friction.....	20x10x20x10x10x
Stearns' Challenge.....	25x10x25x10x10x
Faultless.....	40x10x5
American, 7/8 set \$6.00.....	30x10x
Rider & Wooster, No. 1, 62x4x; No. 2, 75x.....	40x
Paragon, Nos. 1, 2 and 3.....	40x10x
Cincinnati.....	25x10x
Paragon, Nos. 5, 5 1/2, 7 and 8.....	20x10x
Crescent.....	50x
Nickel Cast Iron.....	50x
Nickel, Malleable Iron and Steel.....	40x
Scranton Anti-Friction Single Strap.....	35x5x
Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45x
Star.....	40x10x40x10x5x
May.....	50x50x10x
Barry, \$6.00.....	40x10x
Interstate.....	40x
Warin.....	40x
Pendulum, Payson's.....	4x

**Harness Snaps—See Snaps.****Hatchets—**

American Axe and Tool Co.	
Blood's.....	
Hunt's.....	
Hurd's.....	
Mann's.....	
Peck's.....	40 & 10
Underhill's.....	50x5x
Buffalo Hammer Co.....	
Fayette R. Plumb.....	
C. Hammond & Son.....	
Kelly's.....	
Sargent & Co.....	
R. & W. Co.....	
Ten Eyes Edge Tool Co.....	
Collins.....	10x
Schultz, Loboff & Co.....	50x50x5x

**Hay and Straw Knives—See****Knives.****Hinges—**

<b>Blind Hinges—</b>	
Parker.....	75x2x
Palmer.....	50x5x10x
Seymour.....	70x2x
Huffer.....	50x
Clark's, Nos. 1, 3, 5, 40 and 50.....	75x10x50x30x
Clark's Mortise Gravity.....	50x
Sargent's No. 1, 3, 5, 11, 15.....	75x10x55x10x5x
Sargent's No. 19.....	77x10x10x
Reading's Gravity.....	75x10x75x10x5x
Shepard's.....	75x10x
No. 100.....	75x10x
Niagara.....	80x
Buffalo.....	80x
Clark's Genuine Fastener.....	80x
O. R. Lull & Porter.....	75x10x
Aome, Lull & Porter.....	75x10x50x75x
Queen City Reversible.....	75x10x50x75x
Clark's Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3.....	75x10x25x
North's Automatic Blind Hinges, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	10x
<b>Gate Hinges—</b>	
Western.....	7/8 doz \$4.40, 90x
E. E.....	7/8 doz \$7.00, 55x
E. E. Reversible.....	7/8 doz \$5.20, 55x10x
Clark's, Nos. 1, 2, 3.....	60x10x25x
N. Y. State.....	7/8 doz \$5.00, 55x10x
Automatic.....	7/8 doz \$12.50, 50x
Common Sense.....	7/8 doz pair \$4.50, 50x
Seymour's.....	45x10x
Shepard's.....	60x10x5x
<b>Spring Hinges—</b>	
Geer's Spring and Blank Butts.....	40x
Union Spring Hinge Co.'s list, March 1888.....	2x
Barker's Double Acting.....	25x
Union Mfg. Co.....	25x
Bommer's.....	25x
Buckman's.....	25x
Chicago.....	25x
Bardeley's Patent.....	40x
Acme.....	30x
O. S.....	25x10x
Empire and Crown.....	20x
Hero and Monarch.....	20x
American, Gem, and Star.....	20x
Oxford.....	20x
Wiles.....	10x
Devore's.....	40x
Rex.....	40x
Royal.....	40x
Reliable.....	40x
Champion.....	40x
Stearns.....	50x10x
Samson, 7/8 gross.....	\$14.00
<b>Wrought Iron Hinges.</b> List February 14, 1891.....	50x10x
Strap and T.....	50x10x

Corrugated Strap & T. 50x10x50x10x10x	
Screw Hook and Strap.....	6 to 12 in., 5x, 4x 14 to 20 in., 5x, 3 1/2x 22 to 36 in., 5x, 3x
Screw Hook and Eye.....	1/4 in., 5x, 3 1/2x 3/4 in., 5x, 3 1/2x
Roller Blind Hinges, Nos. 32 and 34.....	50x10x
Roller Blind Hinges, Nos. 32 and 34.....	55x10x
Roller Plate.....	70x10x
Roller Raised.....	70x10x
Plate Hinges (3, 10 & 12 in., 5x, 3 1/2x "Providence" over 12 in., 5x, 3 1/2x)	50x10x
<b>Hoes—</b>	
D. & H. Scovill.....	30x
Lane's Crescent Planters Pattern.....	45x5x
Lane's Razor Blade, Scovill Pattern.....	30x
Hayward, S. & O. Pat.....	45x5x
Sandusky Tool Co., S. & O. Pat.....	50x10x5
Am. Axe and Tool Co., S. & O. Pat.....	50x10x5
Pat.....	60x
Chattanooga Tool Co., S. & O. Pat.....	50x10x5
Grub.....	50x10x5
<b>Handled—</b>	
Garden, Mortar, etc.....	70x
Planter's, Cotton &c.....	70x
Warren Hoe.....	80x
Magic.....	7/8 doz \$4.00
<b>Hog Rings and Ringers—See</b> Rings and Ringers.	
<b>Hoisting Apparatus—See</b> Machines, Hoisting.	
<b>Hollow-Ware—See</b> Ware, Hollow.	
<b>Holders.</b>	
Bag.	
Sprengle's Pat.....	7/8 doz \$18.....60x
Extensio.....	
Barber's, 7/8 doz \$15.00.....	40x40x10x
Ives, 7/8 doz \$20.00.....	60x5x60x10x
Diagonal.....	7/8 doz \$24.00, 40x
Angular.....	7/8 doz \$34.00, 40x5x
<b>File and Tool—</b>	
Bals Pat.....	7/8 doz \$4.00, 85x
Nicholson File Holders.....	30x
Dick's Tool Holder.....	30x
<b>Hooks—</b>	
Cast Iron—	
Bird Cage, Sargent's list.....	60x10x10x
Bird Cage, Reading.....	60x10x10x
Clothes Line, Sargent's list.....	60x10x10x
Clothes Line, Reading list.....	60x10x10x
Ceiling Sargent's list.....	55x10x10x
Harness, Reading list.....	55x10x10x
Coat and Hat, Sargent's list.....	55x10x10x
Coat and Hat, Reading.....	50x10x50x10x
<b>Wrought Iron—</b>	
Cotton.....	7/8 doz \$1.35
Cotton Pat. (N.Y. Mallet & Handle Wks.).....	30x
Tassel and Picture T. & S. Mfg. Co., 50x Wrought Staples, Hooks, &c.....	50x
<b>Wire—</b>	
Wire Coat and Hat, Gem, list April, 1886.....	60x60x10x
Wire Coat and Hat, Miles', list April, 1886.....	60x52x10x
Indestructible Coat and Hat.....	45x15x5x
Wire Coat and Hat, Standard.....	60x10x10x
Handy Hat and Coat.....	50x10x60x
Steady Ceiling Hooks.....	50x10x60x
Belt.....	80x80x10x
Atlas, Coat and Hat.....	60x60x10x
Bright Wire Goods, see Wire.	
<b>Miscellaneous.</b>	
Grass, No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50 Nolin's Grass.....	7/8 doz \$2.25
Bush.....	55x60x
Whimetre Patent.....	55x
Hooks and Eyes—Malleable Iron.....	70x70x10x
Hooks and Eyes—Brass.....	60x10x10x
Fish Hooks, American.....	50x
Bench Hooks.....	See Bench Stops.
<b>Horse Nails—See</b> Nails, Horse.	
<b>Horse Shoes—See</b> Shoes, Horse.	
<b>Hose, Rubber—</b>	
Competition.....	75x75x5x
Standard.....	60x10x60x10x10x
Extra.....	60x10x60x
N. Y. B. & P. Co., Extra.....	40x40x5x
N. Y. B. & P. Co., Dundee.....	50x10x60x
<b>Hushers—</b>	
Blair's Adjustable.....	7/8 gr \$5.00
Blair's Adjustable Clipper.....	7/8 gr 7.00
Hubbard's Solid Steel.....	7/8 gr 4.50
<b>Indurated Fiber-Ware—See</b> Ware, Indurated Fiber.—	
<b>Irons.</b>	
Sad—	
From 4 to 10, at factory.....	7 100x
Self-Heating.....	7/8 doz \$2.40, 40x
Self-Heating, Tailor's.....	7/8 doz \$18.00 net
Mrs. Pott's Irons.....	60x60x10x
Enterprise Star Irons.....	60x60x10x
XX Cold Handle Sad Iron.....	60x5x60x
Ideal Irons new list.....	50x10x50x10x10x
Salamanca, Irons.....	35x
B. B. Sad Irons, 7/8 doz.....	35x5x
Combined Fluter and Sad Iron.....	7/8 doz \$
15.00.....	15x
Fox Reversible, Self-Fluter 7/8 doz \$24.00, Chinese Laundry (N.E. Butt Co.) 8 1/2x, 15x New England.....	55x, 15x
Mahony's Troy Pol. Irons.....	25x
Sensible list Jan. 21.....	50x10x5x
Sensible Tailor's Irons.....	30x
National Self-Heating.....	30x
<b>Soldering—</b>	
Soldering Coppers.....	7/8 doz \$2.20 @ 23x
Covert's Adjustable, list Jan. 1, 1886.....	35x2x
<b>Irons, Pinking, per doz., 55x.</b>	
<b>Jack Screws—See</b> Screws.	
<b>Jacks, Wagon.</b>	
Daily.....	40x
Victor.....	40x
Lockport.....	40x

**Kettles—**

Brass, Spun, Plain, list Jan. 1, '91.....	25x5x5x
Brass, Spun, Flat, W.M. list Jan. 1, '91.....	20x
Enamelled and Tea—See Hollow Ware.	
<b>Keys—</b>	
Lock Ass'n list Dec. 30, 1886.....	50x10x
Eagle, Cabinet, &c.....	60x5x
Hotchkiss' Brass Blanks.....	35x2x5x
Hotchkiss, Copper and Tinned.....	40x
Hotchkiss' Pad, and Cab.....	35x
Ratchet Red Keys.....	40x, 15x
Wollensak Tinned.....	50x10x
<b>Knife Sharpeners—See</b> Sharpen- ers, Knife.	
<b>Knives.</b>	
Butcher, Shoe, &c—	
Wilson's Butcher Knives, list Dec. 8, 1890.....	25x
Ames' Butcher Knives.....	25x
Foster Bros. Butcher, &c.....	40x
Watrous A.A.I. Butcher's, list.....	not
Nichols' Butcher Knives.....	40x10x
W. W. Wilson, Butcher, 6 in., \$3.00; 7 in., \$2.70; 8 in., \$3.80, &c.....	30x25x
Ames' Shoe Knives.....	30x25x
Ames' Bread Knives, 7/8 doz \$1.50, 15x20x Moran's Shoe and Bread.....	30x
Hay and Straw.....	See Hay Knives.
Table and Pocket.....	See Cutlery.
Corn, Auburn Mfg. Co. Crescent.....	\$2.00
Bradley's.....	10x
Wadsworth's.....	25x
<b>Drugs—</b>	
Witherby.....	30x10x
P. S. & W.....	75x75x10x
Mix.....	
New Haven.....	60x10x60x10x5x
Merrill.....	75x75x5x
Douglas.....	15x10x25x
Watrous A.A.I. Butcher's, list.....	not
L. & J. White.....	30x25x
Bradley's.....	35x
Adjustable Handle.....	35x33x5x
Wilkinson's Folding.....	25x25x5x
<b>Hay and Straw—</b>	
Lighting, from jobbers.....	\$3.00 @ \$9.00
Wadsworth's.....	40x75x40x10x
Carter's Needle.....	7/8 doz \$11.00 @ \$11.50
Heath's.....	7/8 doz \$13.00 @ \$13.50
Auburn Hay, Com. and Spear Point.....	50x
Auburn, Straw.....	40x
Nolin's Hay.....	7/8 doz \$7.00 @ \$8.00
<b>Mining.</b>	
Am. (3d quality), 7/8 gr, 1 blade, \$7; 2 blades, \$11; 3 blades, \$15.....	not
Lothrop's.....	30x10x
Smith's, 7/8 doz, Single, \$2.00; Double, \$3 40x45x	
Knapp & Cowies.....	50x10x60x
Buffalo Adjustable.....	7/8 doz \$3.00, 35x
Buffalo Double Adj'table.....	7/8 doz \$3.00, 35x
<b>Knobs—</b>	
Door Mineral.....	60x60x
Door Por. Jap'd.....	70x75x
Door Por. Nickel.....	\$3.00 @ \$3.25
Door Por. Plated, Nickel.....	\$2.00 @ \$2.25
Drawer, Porcelain.....	60x10x60x10x10x
Hemlock Door Knobs.....	40x10x50x
Yale's Towne Wood, list Dec. 1885.....	40x
Furniture, Plain.....	75x gr 10x, 12x
Furniture, Wood Screws.....	55x10x
Base, Rubber Tip.....	70x10x5x
Picture, Judd's.....	60x10x10x70x
Picture, Sargent's.....	70x10x
Picture, Hemlock.....	35x5x
Shutter, Porcelain.....	65x10x
Carriage Jap'd.....	gr 80x, 60x10x
Bardeley's Wood Door, Shutter, &c.....	40x
<b>Ladies—</b>	
Melting, Sargent's.....	55x10x
Melting, Reading.....	35x10x
Melting, Monroe's Pat.....	7/8 doz \$4.00, 40x
Melting, P. S. & W.....	35x10x40x
Melting, Warner's.....	30x
<b>Lanterns—</b>	
Tubular—	
Plain with Guards, 7/8 doz.....	\$3.75 @ \$4.00
Lift Wire, with Guards.....	\$4.00 @ \$4.25
Square Flare, with Guards.....	\$3.75 @ \$4.00
Sq. Lift Wire, with Guards.....	\$4.50
<b>Police Lanterns (including packages).</b> 2 1/4-inch Bull's-eye Police regular.....	7/8 doz \$3.90
3-inch Bull's-eye Police regular.....	7/8 doz \$3.90
2 1/4-inch Bull's-eye Police flash light.....	7/8 doz \$4.00
3-inch Bull's-eye Police flash light.....	7/8 doz \$4.50
<b>Lawn Mowers—See</b> Mowers, Lawn.	
<b>Leaders, Cattle.</b>	
Humason, Beckley & Co.'s.....	70x
Sargent's.....	60x10x
Hotchkiss.....	30x
Peck, Stow & W. Co.....	60x10x
<b>Lemon Squeezers—See</b> Squeezers, Lemon.	
<b>Lifters, Transom.</b>	
Wollensak's.....	60x
Class 3 and 4, Bronzed Iron.....	35x
Class 3 and 4, Bronzed Metal.....	35x
Class 3 and 4, Brass.....	35x
Skylight Lifters.....	60x
Crown, Eagle and Shield.....	60x
Bother's, list Feb. 20, 1891.....	50x
Bronzed Iron Rods.....	50x10x10x5x
Brass, Real Bronze or Nickel Plate.....	30x
Excelsior.....	60x10x5x
Shaw's.....	50x10x
Payson's.....	60x
Universal.....	60x
Solid Grip.....	60x10x
Imperial.....	60x10x
<b>Lines—</b>	
Cotton and Linen Fish, Draper's.....	60x
Draper's and Tate's Chalk.....	80x
Draper's Mason's Lines, 34 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....	55x
Cotton Chalk.....	55x
Samson Cotton, No. 4, \$2; No. 4 1/2, \$2.50; No. 5, \$3.....	10x
Silver Lake, Braided, No. 0, \$6.00; No. 1, \$4.50; No. 2, \$7.00; No. 3, \$7.50; No. 4, \$8.00; No. 5, \$8.50; No. 6, \$9.00; No. 7, \$9.50.....	22x

Mason's Colored Cotton.....	4x
Wire Clothes.....	10x, 15x, 20x
100 ft.....	\$3.50 \$3.00 \$2.50
Ventilator Cord, Samson Braided, White or Drab Cotton.....	7/8 doz \$7.50, 30x
<b>Links, Open.</b>	
Terry's—per gr.....	
Nos.....	1 2 3 4
	\$0.00 8.00 12.00 16.00
<b>Locks, &amp;c.—</b>	
<b>Cabinet—</b>	
Eagle, Gaylord Par.....	list March, '86, rev.
ker and Corbin.....	Jan. 1, '85, 35x4x3x
Delta, Nos. 36 to 39.....	40x
Delta, Nos. 51 to 63.....	40x10x
Delta, Nos. 86 to 96.....	30x
Stoddard Lock Co.....	30x33x10x
"Champion" Night Latches.....	40x
Barnes Mfg. Co.....	40x40x10x
Eagle and Corbin Trunk.....	35x35x
"Champion" Cab. and Combin.....	35x4x
Yale.....	net price
Romer's.....	35x
<b>Door Locks, Latches, &amp;c.</b>	
R. & E. Mfg. Co., list Mar. 30, 1889.....	65x10x70x
Mallory, Wheeler & Co., list July, '88.....	lower net
Sargent & Co., list Aug. 1, '88 Reading Hardware Co., list Feb. 2, '88.....	prices often made.
Brittan, Graham & Mathes, list Jan. 1890.....	60x10x10x
Perkins' Burglar Proof.....	30x25x
Plate.....	35x4x3x
Barnes Mfg. Co.....	40x40x10x
Yale.....	net price
Delta Flat Key.....	30x
L. & C. Round Key Latches.....	30x10x
L. & C. Flat Key Latches.....	35x4x10x
Romer's Night Latches.....	35x4x
Brooklyn Latches.....	50x10x
Shepardson or U. S.....	35x
Seed's N. Y. Hasp Lock.....	35x
<b>Padlocks—</b>	
List June 10, 1891.....	50x2x
Norwich Lock Mfg. Co., old list.....	70x2x
Yale Lock Mfg. Co.'s.....	net price
Eagle.....	35x4x
Eureka, Eagle Lock Co.....	40x2x
Romer's, Nos. 0 to 91.....	30x
Romer's Scandinavian, &c., Nos. 100 to 508.....	15x
A. K. Delta.....	50x
Champion Padlocks.....	40x



**Mallets.**

Hickory.....30x10@30x10x10  
Lignumvita.....30x10@30x10x10  
B. & L. Block Co., Hickory & L. V.  
50x30x10

**Mattecks, Regular List.**

60x10@60x10x5  
**Measures—**  
Standard Fiberglass, No. 1, peck, 7  
dosen, \$4; 1/2 peck, \$3.50.

**Meat Cutters—See Cutters, Meat.****Menders, Harness—**

Per dos.....\$2.00

**Mills.**

Coffee—  
Box and Side, List Jan. 1, 1888, 60x10@—  
American, Enterprise Mfg Co. 30x10@30x  
The Swift, Lane Bros.....30x10x5

**Mining Knives—See Knives, Mining.****Molasses Gates—See Gates, Molasses.****Money Drawers—See Drawers, Money.****Mowers, Lawn.**

Pennsylvania, New Model, Excelsior,  
Continental, &c.....60x60x5

**Philadelphia—**

Perfection.....60x10x5  
Easy.....60x10@60x10x5

**Bay State—**

60x10@60x10x5  
Other Machines.....60x10x5@70x

**Muscles—**

Safety.....7 dos, \$3.00, 25x

**Nails.**

Out and Wire. See Trade Report.

**Wire Nails, Papered.**

Association list, July 15, 70x75x10@80x  
Tack Mfrs. list.....70x70x10x5

**Wire Nails, Standard Penny.**

Card June 1 '89 base.....\$3.10 @ \$3.20

**Horse—**

No. 6 7 8 9 10

Ausable.....33x20x25x24x23x

Clinton, Fin. 19x17x16x15x14x.....30x

Kase.....33x20x25x24x23x

Lyra.....19x17x16x15x14x.....30x

Snodden.....19x17x16x15x14x.....30x

Patnam.....33x21x20x19x18x

1000 lb in year 15x

Vulcan.....33x21x20x19x18x.....30x

Northwest.....33x21x20x19x18x

Globe.....33x21x20x19x18x

Boston.....33x21x20x19x18x

A. C.....33x21x20x19x18x

O. B. K.....33x21x20x19x18x

Hand B.....33x21x20x19x18x

Champlain.....33x21x20x19x18x

Saranac.....33x21x20x19x18x

Champion.....33x21x20x19x18x

Capewell.....33x21x20x19x18x

Star.....33x21x20x19x18x

Anchor.....33x21x20x19x18x

Western.....33x21x20x19x18x

Empire Bronzed.....14x

**Picture—**

Brass Head, Sargent's list.....50x10x10x5

Brass Head, Combination list.....50x10x10x5

Porcelain Head, Sargent's list.....50x10x10x5

Porcelain Head, Combination list.....50x10x10x5

Wiles Patent.....40x

Nail Pullers—See Pullers, Nail.

Nail Sets—See Sets, Nail.

Nut Crackers—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Hot Pressed.....5.50x 5.50x off list.

Cold Punched.....5.00x 5.10x off list.

In packages of 100 lb, add 1.10x lb.

net; in packages less than 100 lb, add

1/2 lb, net.

**Oakum—**

Best or Government.....7x7x4

U. S. Navy.....7x7x4

Navy.....7x7x4

**Oilers—**

Zinc and Tin.....55x10x7x5

Brass and Copper.....50x10x5x10x5

Malleable, Hammers Improved, No. 1,

\$9.00; No. 2, \$4.00; No. 3, \$4.40, 7 dos.

Malleable, Hammers, Old Pattern, same

list.....40x

Prior's Pat. or "Paragon" Zinc.....60x10x10x5

Prior's Pat. or "Paragon" Brass.....50x

Olmstead's Tin and Zinc.....50x

Olmstead's Brass and Copper.....50x

Broughton's Zinc.....50x

Broughton's Brass.....50x

Gem P. D. & Co.....7x7x4

Steel, Draper and Williams.....50x

**Openers, Can.**

Messenger's Comet.....7 dos \$3.00, 35x

American.....7 gross \$2.75 @ \$3.00

Duplex.....7 dos 25x, 15x20x

Lyman's.....7 dos \$3.75, 20x

No. 4 French.....7 dos \$2.25, 50x20x

No. 5, Iron Handle.....7 gr \$6.00, 45x50x

Eureka.....7 dos \$3.00, 10x

Sardine Sissors.....7 dos \$2.75 @ \$3.00

Star.....7 dos \$2.75

Sprague, No. 1, \$3.00, 2, \$3.25; 3, \$3.50

Excelsior No. 1, \$2.50; No. 2, \$1.50, 10x10x10x5

World's Best, 7 gross, No. 1, \$12.00

No. 2, \$34.00; No. 3, \$36.00, 50x10x10x5

Domestic, 7 dos \$2.50, 45x

Champion, 7 dos \$2.00, 50x

Docking, Steam—

Standard.....60x60x5

Extra.....50x50x5

N. Y. B. & P. Co., Standard.....50x

N. Y. B. & P. Co., Empire.....50x

N. Y. B. & P. Co., Salamander.....25x

Jenkins' Standard, 7x8x5, 35x25x5

Miscellaneous—

American Packing.....10x11x

Russia Packing.....14x

Italian Packing.....13x14x

Cotton Packing.....15x17x

Jute.....7x8x5

**Padlocks—See Locks.****Pails.****Galvanized Iron—**

Quarts 10 12 14

Hill's Light Weight, 7 dos, \$2.75 3.00 3.25

Hill's Heavy Weight, 7 ds. 3.00 3.25 3.75

Helwig's.....2.50 2.75 3.00

Adney Shepard & Co.....2.25 2.50 3.00

Iron Clad.....2.50 2.75 3.00

Fire Buckets.....2.75 3.25 3.50

Buckets, see Wall Buckets.

**Indurated Fibre Ware—35x**

Star Pails, 12 qt.....7 dos \$5.40

Stable and Milk, 14 qt.....7 dos \$6.00

Fire Pails, deep.....7 dos \$5.40

1 round bottom.....7 dos \$7.80

**Standard Fibre Ware—**

Plain, Dec'd

Water Pails, 12 qt, per dos.....\$4.50

Dairy Pails, 14 qt., per dos.....4.50 5.00

Fire Pails, No. 1, 12 qt, per dos.....4.50

Fire Pails, No. 2, 14 qt, per dos.....5.00

Sugar Pails.....5.00 6.50

Horse Pails.....5.00

Buggy Pails.....4.00

Slop Jars (bal. trap).....8.00 9.00

Chamber Pails, 14-qt.....6.50 7.50

**Pans.****Dripping.**

Small sizes.....7x 6x4

Large sizes.....7x 6x4

Silver & Co. (Covered).....40x

**Fry—**

Standard List:

No.....0 1 2 3 4

7 dos.....\$3.00 \$3.75 \$4.25 \$4.75 \$5.25

No.....5 6 7 8

7 dos.....\$6.00 \$7.00 \$8.00 \$9.00

Polished, regular goods.....75x75x10x5

Acme Fry Pans.....60x10x5

**Dust—**

Steel Edge, No. 1.....7 dos \$1.75

**Paper and Cloth—**

Sand and Emery—

List April 19, 1889.....50x50x10x5

Sibley's Emery and Crocus Cloth.....30x

**Papers.****Apple.**

Advance.....7 dos \$4.75

Baldwin.....7 dos 5.25

Bonanza.....each 5.00

Daisy.....7 dos 4.00

Dandy.....each 7.50

Eclipse.....7 dos 4.25

Eureka, 1888.....each 15.00

Family Bay State.....7 dos 12.00

Favorite.....7 dos 5.00

Gold Medal.....7 dos 4.00

Ideal.....7 dos 4.00

Improved Bay State.....7 dos \$7.00 @ \$8.00

Little Star.....7 dos 4.50

Monarch.....7 dos 12.50

New Lightning.....7 dos 6.50

Orion.....7 dos 4.00

Pearl.....7 dos 4.00

Perfection.....7 dos 4.00

Pomona.....7 dos 4.00

Rocking Table.....7 dos 6.00

Turn Table.....7 dos 4.50

Victor.....7 dos 4.00

Waverly.....7 dos 4.00

White Mountain.....7 dos 4.25

72.....7 dos 7.00

**Potato—**

White Mountain.....7 dos \$4.50

Antrim Combination.....7 dos 15.50

Hoodier.....7 dos 12.50

Saratoga.....7 dos \$5.50

**Pencils—**

Faber's Carpenters'.....high list 50x

Faber's Round Gilt.....7 gro \$5.25

Dixon's Lead.....7 gro \$4.50

Dixon's Lumber.....7 gro \$6.75

Dixon's Carpenters'.....10x

**Picks—**

Railroad or Adze Eye, 5 to 6, \$12.00;

6 to 7, \$13.00.....60x10@60x10x5

**Picture Nails—See Nails, Picture.****Pinking Irons—See Irons, Pinking.****Pins.****Box—**

Humason, Beckley & Co.'s.....50x10x5

Sargent & Co.'s.....17 and 18.....60x10x5

Peck, Stow & W Co.....50x10@50x10x5

Curfew—

Silvered Glass.....not

White Enamel.....not

Scotchman.

Iron, list Nov. 11, 1885.....50x10@50x10x5

Brass.....60x60x5

Pipe, Wrought Iron—

List September 13, 1889.

14 and under, Plain.....57x4

14 and under, Galvanized.....47x4

14 and over, Plain.....67x4

14 and over, Galvanized.....55x

Boiler Tubes.

Sizes up to 24 in. inclusive.....55x

Sizes 3 to 6 in. inclusive.....55x

Sizes 7 in. and up.....55x

Casing.....55x

Steel Boiler Tubes.....50x

Planes and Plane Irons—

Wood Planes—

Molding.....40x10x5

Bench, First Quality.....50x10x5

Bench, Second Quality.....55x10x5

Baker's (Stanley R. & L. Co.).....40x10x5

Iron Planes—

Baker's (Stanley R. & L. Co.).....40x10@40x10x5

Miscellaneous Planes (Stanley R. & L. Co.).....30x10@30x10x5

Victor Planes (Stanley R. & L. Co.).....20x10@20x10x5

Steer's Iron Planes.....35x35x10x5

Meriden Nail Iron Co.'s.....40x40x10x5

Davis's Iron Planes.....40x40x10x5

Birmingham Plane Co.....50x50x10x5

Gage Tool Co.'s Self-Setting.....30x40x10x5

Chaplin's Iron Planes.....40x40x10x5

Sargent's.....30x10@30x10x5

Standard Tool Co.....50x50x5

Plane Irons—

Butcher's.....\$5.00 @ \$5.25 to 2

Buck Bros.....30x

<b>Hack Saws—</b>		<b>Shaves, Spoke</b>		<b>Skels, Thimble—</b>		<b>Sticks and Dies—</b>	
Griffin's, complete, 40x10x50		Iron, 40x10x50		Western list, 75x50x75x105		Blacksmith's	
Griffin's Hack Saw, Blades, 40x10x50		Wood, 40x10x50		Columbus Wrt. Steel, Special net price		Waterford Goods, 40x40x105	
Star Hack Saws and Blades, 40x10x50		Bailey's (Stanley R. & L. Co.), 40x10x50		Coldbrookdale Iron Co., 60x		Butterfield's Goods, 40x40x105	
Barnes and Crescent, 40x10x50		Shears—		Seneca Falls Pattern, 60x		Lightning Screw Plates, 35x40x40	
<b>Scroll—</b>		Goodell's, 40x10x50		Utica P. & T. Shears, 60x		Reese's New Screw Plates, 35x40x40	
Lester, complete, \$10.00, 55x		American (Cast) Iron, 75x10x75x10x5		Utica Turned and Fitted, 60x		Reversible Ratchet, 30	
Rogers, complete, \$4.00, 55x		Barnard's Lamp Trimmers, 40x3.75		<b>Snaps, Harness, &amp;c.—</b>		Gardner, 30	
Barnes' Builders' and Cap. Makers' \$15.25x		Tinner's, 40x3.75		School, by case, 50x10x50x10x105		<b>Steps, Bench.</b>	
Barnes' Scroll Saw Blades, 35x		Seymour's, List, Dec, 1881, 60x10x10x50x10x10x5		Anchor (T. & S. Mfg. Co.), 60x		Morrell's, 40x30, 50x	
<b>Saw Frames—See Frames, Saw.</b>		Heinisch's, List, Dec, 1881, 60x10x10x50x10x10x5		Hotchkiss, 60x10x50x10x5		Weston's, No. 1, \$10; No. 2, \$10x10x10x5	
<b>Saw Sets—See Sets, Saw.</b>		Cast Steel Trimmers, 60x10x10x50x10x10x5		Hotchkiss, 60x10x50x10x5		McGill's, 40x30, 50x	
<b>Scales—</b>		First quality, 60x10x10x50x10x10x5		Hotchkiss, 60x10x50x10x5		Olinchani, 40x30, 50x	
Hatch, Counter, No. 171, good quality, 40x		Second quality, 60x10x10x50x10x10x5		Hotchkiss, 60x10x50x10x5		Terrell's Nos. 1 and 2, 40x30, 50x	
Hatch, Tea, No. 161, 40x		Diamond Cast Shears, 60x10x10x50x10x10x5		Hotchkiss, 60x10x50x10x5		3, \$3.00, 40x30, 50x	
Union Platform, 40x		Clippers, 60x10x10x50x10x10x5		Hotchkiss, 60x10x50x10x5		<b>Stones—</b>	
Chattillon's Grocers' Trip Scales, 50x		Victor Cast Shears, 75x10x75x10x5		Hotchkiss, 60x10x50x10x5		Hindstone No. 1, 3x; Axa, 3x; Slips	
Chattillon's Eureka, 50x		Howe Bros. & Hulbert, Solid Forged Steel, 40x		Hotchkiss, 60x10x50x10x5		No. 1, 4x	
Chattillon's Favorite, 40x		Chicago Drop Forge & F. Co., Solid Steel Forged, 40x		Hotchkiss, 60x10x50x10x5		Sand Stone, 3x	
Family, Turnbells, 30x50x10x5		Davenport Cutlery, 60x10x10x5		Hotchkiss, 60x10x50x10x5		Washita Stone, Extra, 3x	
Rieble Bros.' Platform, 40x		Claude Shear Co., Japaned, 70x		Hotchkiss, 60x10x50x10x5		Washita Stone, No. 1, 3x	
<b>Scale Beams—See Beams, Scale.</b>		Galvanne, 3x to 9 in, 40x, \$1.00 1/2 inch		Hotchkiss, 60x10x50x10x5		Washita Stone, No. 2, 3x	
<b>Scissors, Fluting—</b>		Pruning Shears and Hooks.		Hotchkiss, 60x10x50x10x5		Washita Slips, No. 1, Extra, 3x	
Adjustable Box Scraper (S. R. & L. Co.), 40x		Diston's Combined Pruning Hook and Saw, 40x		Hotchkiss, 60x10x50x10x5		Washita Slips, No. 2, Extra, 3x	
Box, 1 Handle, 40x		Diston's Pruning Hook, 40x		Hotchkiss, 60x10x50x10x5		Washita Slips, No. 3, Extra, 3x	
Box, 2 Handle, 40x		E. S. Lee & Co.'s Pruning Tools, 40x		Hotchkiss, 60x10x50x10x5		Washita Slips, No. 4, Extra, 3x	
Defiance Box and Ship, 40x		Henry's Pruning Shears, 40x		Hotchkiss, 60x10x50x10x5		Washita Slips, No. 5, Extra, 3x	
Foot, 40x		Wheelers, M. & C. Co.'s Combination, 40x		Hotchkiss, 60x10x50x10x5		Arkansas Stone, No. 1, 6 to 9 in, 3x	
Ship, Common, 40x		Dunlap's Saw and Chisel, 40x		Hotchkiss, 60x10x50x10x5		Turkey Oil Stone, 4 to 5 in, 40x	
Ship, R. I. Tool Co., 40x		J. Mallinson & Co., No. 1, \$5.25; No. 2, 7.25		Hotchkiss, 60x10x50x10x5		Turkey Slips, 40x	
<b>Screen Window and Door</b>		F. S. & W. Co., 60x		Hotchkiss, 60x10x50x10x5		Lake Superior, Chase, 40x	
<b>Frames—See Frames.</b>		<b>Snips, J. Mallinson &amp; Co., 35x</b>		Hotchkiss, 60x10x50x10x5		Lake Superior Slips, Chase, 40x	
<b>Screw Drivers—See Drivers, Screw.</b>		<b>Sheaves—</b>		Hotchkiss, 60x10x50x10x5		Seneca Stone, Red Paper Brand, 40x	
<b>Screws.</b>		Sliding Door—		Hotchkiss, 60x10x50x10x5		<b>Stove Polish—See Polish, Stove.</b>	
<b>Bench and Hand—</b>		M. W. Co., List July, 1888, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		<b>Stretchers, Carpet.</b>	
Bench, Iron, 55x10x55x10x10x5		R. & E., List Dec, 18, 1888, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Cast Steel, Polished, 40x	
Bench, Wood, Hickory, 40x		Corbin's List, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Cast Iron, Steel Points, 40x	
Bench, Wood, Hickory, 40x		Patent Roller, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Socket, 40x	
Hand, Wood, 40x		Patent Roller, Hatfield's, 75x		Hotchkiss, 60x10x50x10x5		Sullard's, 40x	
Hand, Grand Rapids, List, 75x		Russell's Anti-Friction, List Dec, 18, 1888, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		<b>Strops, Razor—</b>	
Lag, Hunt Point, List Jan, 1, 1890, 75x10x50x10x5		Sliding Shutter—		Hotchkiss, 60x10x50x10x5		Genuine Emerson, 60x	
Coach and Lag, Gimlet Point, List Jan, 1, 1890, 75x10x50x10x5		R. & E., List Dec, 18, 1888, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Imitation, 40x	
Bed, 40x		Sargent's List, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Torrey's, 40x	
Hand Rail, Brown's Mfg. Co., 70x10x75x10x5		Reading List, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Badger's Belt and Combs, 40x	
Hand Rail, H. & F. Mfg. Co., 75x		<b>Shells—</b>		Hotchkiss, 60x10x50x10x5		Lamont Combination, 40x	
Hand Rail, Am. Screw Co., 75x		First quality 4, 8, 10 and 12 gauge, 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Jordan's Pat. Padded, List Nov, 1, 1890, 40x	
Jack Screws, Millers Falls List, 60x10x50x10x5		First quality, 14, 16 and 20 gauge (10 in), 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Electric, List net	
Jack Screws, P. S. & W., 35x		Star, Club, Rival and Climax brands, 40x3.75		Hotchkiss, 60x10x50x10x5		<b>Stuffers or Fillers, Sausage—</b>	
Jack Screws, Sargent's, 60x10x50x10x5		Setbold's Comb. Shot Shells, 15x2.5		Hotchkiss, 60x10x50x10x5		Miles' "Challenge", 40x	
Jack Screws, Stearns', 40x10x50x10x5		Irish Shot Shells, Club, Rival, Climax, 60x3.75		Hotchkiss, 60x10x50x10x5		Perry, 40x	
<b>Orb—</b>		<b>Shells Loaded—</b>		Hotchkiss, 60x10x50x10x5		Draw Out No. 4, each \$30.00, 40x	
Hummason & Beckley Mfg. Co., 40x10x50x10x5		standard List, July 19, 1890, 40x10x50x10x5		Hotchkiss, 60x10x50x10x5		Enterprise Mfg. Co., 40x10x50x10x5	
Williamson's, 35x40x35x40x5		<b>Ship Tools—</b>		Hotchkiss, 60x10x50x10x5		Silver's, 40x10x50x10x5	
Howe Bros. & Hulbert, 30x		L. & J. J. White, 30x		Hotchkiss, 60x10x50x10x5		<b>Sweepers, Carpet.</b>	
<b>Machines—</b>		<b>Shoes, Horse, Mule, &amp;c.—</b>		Hotchkiss, 60x10x50x10x5		Bissell No. 5, 40x	
<b>Flat Head, Iron.</b>		<b>Horse—</b>		Hotchkiss, 60x10x50x10x5		Bissell No. 7 New Drop Fan, 40x	
Round Head, Iron, 60x		Bryden's, Perkins', Phoenix and Bryden's Bows, at factory, 40.00		Hotchkiss, 60x10x50x10x5		Bissell, Grand, 40x	
<b>Wood—</b>		Bryden's Frog Pressure, at factory, 45.00		Hotchkiss, 60x10x50x10x5		Grand Rapids, 40x	
List January 1, 1891, 75x		<b>Mule—</b>		Hotchkiss, 60x10x50x10x5		Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00	
Flat Head Iron, 75x		Add \$1 1/2 keg to above prices.		Hotchkiss, 60x10x50x10x5		Magic, 40x	
Round Head Iron, 67x		<b>Ox, Wrought—</b>		Hotchkiss, 60x10x50x10x5		Jewel, 40x	
Flat Head Brass, 75x		Ton lots, 1000 lb lots, 40x		Hotchkiss, 60x10x50x10x5		Improved Parlor Queen, 40x	
Round Head Brass, 65x		Shot—		Hotchkiss, 60x10x50x10x5		Nickel, 40x	
Flat Head Brass, 75x		Drop, up to B, 25-lb bag, \$1.47		Hotchkiss, 60x10x50x10x5		Japanned, 40x	
Round Head Brass, 65x		Drop, B and larger, 1.37		Hotchkiss, 60x10x50x10x5		Excelior, 40x	
Round Head Brass, 75x		Drop, B and larger 5-lb bag, 1.40		Hotchkiss, 60x10x50x10x5		Garland, 40x	
Round Head Brass, 65x		Buck and Chilled, 25-lb bag, 1.67		Hotchkiss, 60x10x50x10x5		Parlor Queen, 40x	
Round Head Brass, 75x		Buck and Chilled, 5-lb bag, 1.67		Hotchkiss, 60x10x50x10x5		Housewife's Delight, 40x	
Rogers' Drive Screws, 65x		Dust Shot, 25-lb bag, 2.00		Hotchkiss, 60x10x50x10x5		Queen, 40x	
<b>Scroll Saws—See Saws, Scroll.</b>		Dust Shot, 5-lb bag, 45		Hotchkiss, 60x10x50x10x5		Queen, with band, 40x	
<b>Scythes.</b>		<b>Shovels and Spades—</b>		Hotchkiss, 60x10x50x10x5		King, 40x	
Grain, 40x50x40x10x5		Ames' Shovels, Spades, &c., List Nov. 1, 1888, 40x		Hotchkiss, 60x10x50x10x5		Weed, Improved, 40x	
Grain, 40x50x40x10x5		North-Jobbers frequently give 50x75x		Hotchkiss, 60x10x50x10x5		Hub, 40x	
<b>Scythe Handles—See Handles, Scythe.</b>		extra on above.		Hotchkiss, 60x10x50x10x5		Cup-Wheel, 40x	
<b>Axe and Tool.</b>		Griffith's Black Iron, 50x10x50x10x5		Hotchkiss, 60x10x50x10x5		Easy, 40x	
Aiken's Sets, Axes and Tools, 55x10x50x10x5		Griffith's C. S., 60x10x50x10x5		Hotchkiss, 60x10x50x10x5		Monarch, 40x	
Fray's Adj. Tool Hds., No. 1, \$12; 2, \$13; 3, \$14; 4, \$15, 55x10x50x10x5		Griffith's Solid C. S. R. R. Goods, 30x		Hotchkiss, 60x10x50x10x5		Goshen, 40x	
Miller's Falls Adj. Tool Hds., No. 1, \$12; 2, \$13; 3, \$14; 4, \$15, 55x10x50x10x5		Husey,					



**Fluware-**

Stamped, Japanned and Placed, list Jan. 30 1892. 70&100 70&255

**Tire Benders, Upsetters, &c-**

See Benders and Upsetters, Tire.

**Tools.****Coopers'-**

Bradley's..... 80%  
Barton's..... 90&100  
L. & J. White..... 30&35  
Albertson Mfg. Co..... 25%  
Beatty's..... 30%  
Sandsky Tool Co..... 80&100  
Shaves, Cincinnati Tool Co..... 30%

**Lumber-**

Ring Peavies, "Blue Line"..... 7 dos \$20.00  
Ring Peavies, Common..... 7 dos \$18.00  
Steel Socket Peavies..... 7 dos \$21.00  
Mail Iron Socket Peavies..... 7 dos \$19.00  
Cant Hooks, "Blue Line"..... 7 dos \$16.00  
Cant Hooks, Common Finish..... 7 dos \$14.00  
Cant Hooks, Mail Socket Clasp, "Blue Line" Finish..... 7 dos \$16.00  
Cant Hooks, Mail Socket Clasp, Common Finish..... 7 dos \$14.50  
Cant Hooks, Clip Clasp, "Blue Line" Finish..... 7 dos \$14.00  
Cant Hooks, Clip Clasp, Common Finish..... 7 dos \$12.00  
Hand Spikes..... 7 dos 6 ft., \$15.00; 8 ft., \$20.00  
Pike Poles, Pike & Hook, 7 dos, 12 ft., \$11.50; 14 ft., \$12.50; 16 ft., \$14.00; 18 ft., \$15.50; \$15.00  
Pike Poles, Pike only, 7 dos, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$12.00; 18 ft., \$13.00; 20 ft., \$20.00  
Pike Poles, not ironed, 7 dos, 12 ft., \$8.00; 14 ft., \$7.00; 16 ft., \$8.00; 18 ft., \$9.00; 20 ft., \$10.00  
Selling Poles, 7 dos, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00  
Swamp Hooks..... 7 dos \$18.00

**Saw.**

Atkins' Perfection..... 7 dos \$12.00  
Atkins' Excelsior..... 7 dos \$8.00  
Atkins' Giant..... 7 dos \$4.00

**Tobacco Cutters-See Cutters, Tobacco.****Transom Lifters-See Lifters, Transom.****Traps-****Game-**

Newhouse..... 40&40&55  
Oxoid Pattern..... 70&105  
Game, Blake's Patent..... 40&10&25  
Mouse and Rat-  
Mouse Wood Choker, 7 dos holes, 11&12  
Mouse, Round Wire..... 7 dos \$1.50 10%  
Mouse, Cage Wire..... 7 dos \$2.50, 10%  
Mouse, Catch-em-alive..... 7 dos \$2.50 10%  
Mouse, Bonanza..... 7 dos \$0.90&1.00  
Rat, Decoy..... 7 gr \$10.00, 10%  
Ideal..... 7 gr \$10.00  
Cyclone..... 7 gr \$5.25  
Hotchkiss Metallic Mouse, 5-hole traps, 7 dos, 50% in full cases, 7 dos \$7.50  
Hotchkiss Imp. Rat Killer..... 7 gr \$15.50  
Hotchkiss New Rat Killer..... 7 gr \$15.00  
Schuyler's Rat Killer..... 7 gr \$15.00

**Triers-**

Butter and cheese..... 25%

**Trimmers, Spoke.**

Bonney's..... 7 dos \$10.00, 50%  
Stearns'..... 7 dos \$10.00  
Ives, No. 1, \$15.00; No. 2, \$12.00 7 dos \$10.00  
Douglas..... 7 dos \$0.00, 20%  
Olinnati..... 25%

**Trowels-**

Lothrop's Brick and Plastering..... 20&10&25&35

Reed's Brick and Plastering..... 15%  
Diaton's Br'k and Plastering..... 25%  
Pence's Plastering..... 25%  
Clement & Maynard's..... 20%  
Rose's Brick..... 16&20%  
Brade's Brick..... 25%  
Worral's Brick and Plastering..... 20%  
Garden..... 20%

**Trucks, Warehouse, &c-**

R. & L. Block Co.'s list, '92..... 40%

**Tubes, Boiler-**

See Pipe.

**Twine-**

Flax Twine- BC. B.  
No. 9, 14 and 1/2 B. Balls..... 25% 31%  
No. 12, 14 and 1/2 B. Balls..... 25% 31%  
No. 18, 14 and 1/2 B. Balls..... 25% 31%  
No. 24, 14 and 1/2 B. Balls..... 25% 31%  
No. 30, 14 and 1/2 B. Balls..... 18% 25%  
No. 36, 14 and 1/2 B. Balls..... 18% 25%  
Chalk Line, Cotton, 1/2 and 3/4 B. Balls..... 25%  
Mason Line, Linen, 1/2 B. Balls..... 25%  
2-Ply Hemp, 1/2 and 3/4 B. Balls (Spring Twine)..... 15%  
2-Ply Hemp, 1 B. Balls..... 15%  
3-Ply Hemp, 1 1/2 B. Balls..... 15%  
Cotton Wrapping, 5 Balls to a..... 15%  
Wool..... 15%  
Paper..... 15%  
Cotton Mops, 6, 9, 12 and 15 ft. to dos..... 15%

**Vises-**

Solid Box..... 50&100&50&10&25  
Parallel-  
Fisher & Norris Double Screw..... 15&10%  
Stephens'..... 25&30%  
Parker's..... 25&30%  
Wilson's..... 55%  
Howard's..... 40%  
Bonney's..... 40&10%  
Miller's Falls..... 40&10%  
Trenton..... 40&10%  
Merrill's..... 40&10%  
Sargent's..... 40&10%  
Backus and Union..... 40%  
Double Screw Leg..... 15&10%  
Prestis..... 30&25%  
Simpson's Adjustable..... 40%  
Moore's..... 30%  
Massey Quick Action..... 30&25%

**Saw Files-**

Bonney's, Nos. 2 & 3, \$15.00..... 40&10%  
Stearns'..... 35&40&10&35&40&10%  
Stearns' Silent Saw Files..... 35&40&10%  
Sargent's..... 35%  
Hopkins..... 7 dos \$17.50, 10%  
Reading..... 40&10%  
Wentworth..... 30&10%

**Miscellaneous.**

Combination Hand Vises..... 7 gr \$42.00  
Oxoid Hand Vises..... 30%  
Bauer's Pipe Vises..... 19%  
Cincinnati..... 35&10%  
Enterprise Pipe Vises, each..... \$3.00  
Massey Combination Pipe..... 40%

**Wads-Price per M.**

J.M.C.W.R.A.-B.E., 11 up..... 65%  
J.M.C.W.R.A.-B.E., 9&10..... 85%  
J.M.C.W.R.A.-B.E., 8..... 90%  
J.M.C.W.R.A.-B.E., 7..... 11.10  
J.M.C.W.R.A.-F.E., 11 up..... 1.15  
J.M.C.W.R.A.-F.E., 9&10..... 1.50  
J.M.C.W.R.A.-F.E., 8..... 1.70  
J.M.C.W.R.A.-F.E., 7..... 1.80  
Hoy's B.E., 11 up..... \$1.70&1.75  
Hoy's P.E., 11 up..... 3.00&3.25

**Wagon Boxes-See Boxes, Wagon.**

Washer Cutters-See Cutters, Washer.

**Wagon Jacks-See Jacks, Wagon.****Ware, Hollow, Enameled, &c.****Cast Iron, Hollow-**

Stove Hollow-Ware-  
Ground..... 60&10%  
Unground..... 60&10&10%  
White Enameled-Ware-  
Mashin Kettles..... 70&100 70&10&25%  
Boilers and Saucepans..... 50&100 60%  
Tinned Boilers and Spans..... 50&100 60%  
Rustless Hollow-Ware-  
Stove..... 50%  
Mashin Kettles..... 60&10&10%  
Boilers and Saucepans..... 40&25%

**Enameled-**

Agate and Granite Ware, list Jan. 1, 1892..... 35&40%  
Ironclad Enameled Ware..... dis 35&40%

**Kettles-**

Galvanized Tea-Kettles-  
Inch..... 6 7 8 9  
Each..... 55¢ 60¢ 75¢ 75¢

**Standard Fiber-**

	Per Dozen.	Plain.	Dec'd
Wash-Basins, 10 1/2 in.....	\$2.00	\$2.25	\$2.50
Wash-Basins, 12 in.....	2.25	2.75	4.00
Keelers, 11 1/2 in.....	4.00	4.50	4.50
Spittoons, "Daisy" 8 in.....	4.00	4.00	4.00
Pock Measure.....	3.50		
Half-Peck Measure.....	3.50		

**See also Falls.****Indurated Fiber-25%**

Spittoons, No. 2, 7 dos..... \$3.40  
Basins, Ringed, 7 dos, No. 2..... \$3.00  
Washbasins, Nested, Nos. 0, 1, 2 and 3 (4 pieces), 7 nest..... \$7.50  
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), 7 nest..... \$5.00  
Butter Bowls 12, 17 and 19-inch (3 pieces), 7 nest..... \$1.70  
Liquid Measures, pt., qt., 3 qt. and funnel (4 pieces) 7 set..... \$1.00  
See also Falls.

**Silver Plated, Hollow-**

4 mo. or 5 x cash in 30 days.  
Reed & Barton.....  
Meriden Britannia Co..... 40&25%  
Simpson, Hall, Miller & Co.....  
Rogers & Brother.....  
Hartford Silver Plate Co..... 40&25%  
William Rogers Mfg. Co..... 40&25%

**Washers-**

Size hole..... 5-16 1/2 1/2 1/2 to 1 1/2  
Washers..... 6 5 3.50 3  
In lots less than 200, 7, 5, add 1/4, 5-5 boxes 1¢ to list.

**Wedges-**

Iron..... 7 3 1/2  
Steel..... 7 3 1/2

**Weights, Sash-**

Solid Eyes..... 7 ton \$18&19

**Well Buckets, Galvanized-See Buckets, Well, Galvanized.****Wheels, Well.**

8 in., \$2.35; 10 in., \$2.70; 12 in., \$2.9

**Wire and Wire Goods-****Iron-**

Market.  
Br. & Ann., Nos. 0 to 18..... 77%  
Cop'd, Nos. 0 to 18..... 75%

Galv., Nos. 0 to 18..... 07%  
Tin'd, Tinned list Nos. 0 to 18..... 07%  
Stones.  
Br. & Ann'd, Nos. 16 to 18..... 77%  
Bright and Ann'd, Nos. 19 to 20..... 80%  
Br. & Ann'd, Nos. 27 to 28..... 82%  
Tinned.  
Tinned Brown Wire, 18 to 21, 7..... 5%  
Galvanized Fence, Nos. 8 and 9..... 70%  
Brass, list Jan. 18, 1892..... 35%  
Copper, list Jan. 18, 1892..... 35%  
Annealed Wire on Spools..... 55%  
Main's Steel and Tin'd on Spools..... 55%  
Main's Brass and Cop. on Spools..... 45%  
Tate's Spooled, Tinned and Annealed..... 55%  
Tate's Spooled Cop. and Brass..... 45%  
Cast Steel Wire..... 50%  
Stub's Steel Wire..... \$8.00 to 2.30%  
Steel Music Wire, 12 to 30..... 60&70%  
Wire Clothes Lines, see Lines.  
Wire Picture Cord see cord.

**Bright Wire Goods-**

Standard list..... 80&10%

**Wire Cloth and Netting.**

Painted Screen Cloth, good quality \$100 sq. ft., \$1.40

Galvanized Wire Netting..... 70&10&75%

Wire, Barb.-F.o.b. Cars, Dis. 3% cash in 10 days.

	Painted.	Galvan.
Pittsburgh and Cleveland.....	\$2.55	\$3.05
Allegheny, Cincinnati and Joliet.....	2.65	3.15
St. Louis.....	2.10	3.20
Keokuk.....	2.75	3.25
Lockport, Baker Perfect.....	2.85	3.35
Lawrence and Omaha.....	2.90	3.40
San Francisco.....	3.30	4.30

**Wire Rope-See Rope, Wire.****Wrenches-**

American Adjustable..... 40%  
Baker's Adjustable "S"..... 40&10%  
Baker's Diagonal..... 40&10%  
Coe's Genuine..... 50&25%  
Coe's "Mechanics"..... 50&10&25%  
Girard Standard..... 65&10%  
Lamson & Sessions' Engineers..... 60&10%  
Lamson & Sessions' Standard..... 70&10%  
P. S. & W., Agricultural..... 75&10%  
Girard Agricultural..... 70&10&25%  
Lamson & Sessions' Agric'l..... 70&10&25%  
Bemis & Caffs  
Pat. Combination..... 35%  
Merrick's Pattern..... 35%  
Briggs' Pattern..... 35%  
Cylinder or Gas Pipe..... 40&25%  
No. 3 Pipe..... 40&10%  
Aiken's Pocket (Bright)..... 50&10%  
The Favorite Pocket..... 7 dos \$4.00, 40%  
Webster's Pat. Combination..... 35%  
Boardman's..... 30&10%  
Always Ready..... 35&25%  
Alligator..... 35&10%  
Donohue's Engineer..... 40&10%  
Acme, Bright..... 50&25%  
Acme, Nickel..... 40&25%  
Hercules..... 70%  
Walker's..... 55&25%  
Diamond Steel..... 55&25%  
Cincinnati Brace Wrenches..... 55&10%  
Tate's Vise Wrench..... 55&10&25%

**Wringers, Clothes-**

Am Wringer Co.'s list, July 15, 91, 3% cash

Colby Wringer Co., list Sept. 1, 91, 5% cash

**Wrought Goods-**

Staples, Hooks, &c., list Jan. 12, 1890, 35&35&15%

**PAINTS, OILS AND COLORS.—Wholesale Prices.****Animal and Vegetable Oils.**

Linseed, City, raw, per gal. 37 00 ..  
Linseed, City, boiled..... 40 00 38  
Lard, City, Extra White..... 54 00 56  
Lard, City, Prime..... 53 00 54  
Lard, City, Extra No. 1..... 49 00 45  
Lard, City, No. 1..... 37 00 40  
Lard, Western, prime..... 52 00 53  
Cotton-seed, Crude, prime..... 25 00 26  
Cotton-seed, Crude, off grades..... 22 00 23  
Cotton-seed, Summer Yellow, prime..... 30 00 31  
Cotton-seed, Summer Yellow, off grades..... 28 00 29  
Sperm, Crude..... 70 00 71  
Sperm, Natural Spring..... 72 00 73  
Sperm, Bleached Spring..... 73 00 74  
Sperm, Natural Winter..... 73 00 74  
Sperm, Bleached Winter..... 73 00 74  
Whale, Crude..... 45 00 46  
Whale, Natural Winter..... 54 00 55  
Whale, Bleached Winter..... 54 00 55  
Whale, Extra Bleached..... 54 00 55  
Sea Elephant, Bleached Winter..... 63 00 64  
Menhaden, Crude, Sound..... 30 00 32  
Menhaden, Crude, Southern..... 30 00 32  
Menhaden, Light Pressed..... 37 00 38  
Menhaden, Bleached W'ter..... 38 00 39  
Menhaden, Extra Bleached..... 40 00 42  
Tallow, City, prime..... 43 00 44  
Tallow, Western, prime..... 43 00 44  
Cocoanut, Ceylon..... 54 00 55  
Cocoanut, Ceylon..... 54 00 55  
Cod, Domestic..... 40 00 40  
Cod, Foreign..... 40 00 40  
Red Elaine..... 54 00 56  
Red Saponified..... 54 00 56  
Bank..... 54 00 56  
Strait..... 54 00 56  
Olive, Italian, bbls..... 61 00 62  
Neatfoot, prime..... 55 00 56  
Palm, prime, Laroos..... 55 00 56

**Mineral Oils.**

Black, 20 gravity, 25 @ 30 cold test..... 7 00 7%  
Black, 20 gravity, 15 cold test..... 8 00 8%  
Black, 20 gravity, summer..... 8 00 8%  
Cylinder light, altered..... 15 00 13

**Paints and Colors.**

Barytes, Foreign, 7 ton, \$23.00 @ \$24.00  
Barytes, Amer. floated..... 30.00 @ 32.00  
Barytes, Amer. No. 1..... 19.00 @ 20.00  
Barytes, Amer. No. 2..... 13.00 @ 16.00  
Barytes, Amer. No. 3..... 11.00 @ 12.00  
Blue, Celestial..... 6 00 8  
Blue, Chinese..... 50 00 55  
Blue, Prussian..... 25 00 40  
Blue, Ultramarine..... 8 00 25  
Brown, Spanish..... 3 00 1  
Brown, Vandyke, Amer..... 3 00 3 1/2  
Brown, Vandyke, English..... 6 00 8  
Carmine, No. 40, in bulk..... 3.10 ..  
Carmine, No. 40, in boxes or barrels..... 3.20 ..  
Carmine, No. 40, in ounce bottles..... 4.20 ..  
Chalk, in bulk..... 7 ton. 1.75 ..  
Chalk, in bbls., 7 ton..... 33 00 40  
China Clay, English..... 7 ton, 12.00 @ 13.00  
Cobalt Oxide, prep'd..... 2.90 ..  
Cobalt Oxide, black..... lots 100's 3.00 ..  
Cobalt Oxide, black..... less 100's 2.65 ..  
Green, Paris, in bulk..... 14 00 15 1/2  
Green, Paris, 170 @ 175 .. 14%  
Green, Paris, small pack..... 16 00 21%  
Green, Chrome, ordinary..... 8 00 11  
Green, Chrome, pure..... 23 00 35  
Lead, Eng., B.B. white..... 8 00 10  
Lead, Amer. White, dry, in oil: 7%  
Kegs, lots less than 500 .. 7%  
Kegs, lots 500 to 15 tons..... 6%  
Kegs, lots 15 tons and over..... 6%  
Lead White in oil 25 b tin pelle add to keg price..... 3 1/2  
Lead, White, in oil, 12 1/2 b tin pelle, add to keg price..... 1

**Lead, White, in oil, 1 to 5 b as sorted tins, add to keg price.**

Lead, Red, bbls. and 1/2 bbls..... 6 00 7 1/2  
Lead, Red, kegs..... 6 00 7 1/2  
Litharge, kegs..... 6 00 7 1/2  
Litharge, bbls. and 1/2 bbls..... 6 00 7 1/2  
Tungsten, Lead and Litharge-On lots of 500 or over, 60 days' time or 2% discount for cash if paid within 15 days of date of invoice.  
Ocher, Rochelle..... 1.35 @ 1 1/2  
Ocher, French Washed..... 1 1/2 @ 2  
Ocher, German Washed..... 1 1/2 @ 2  
Ocher, American..... 0 00 1 1/2  
Orange Mineral, English..... 10 00 10 1/2  
Orange Mineral, French..... 10 00 10 1/2  
Orange Mineral, German..... 9 00 10  
Orange Mineral, American..... 8 00 8 1/2  
Paris White, English Cliff-stone..... 1.00 @ 1.15  
Paris White, American..... 70 00 75  
Red, Indian, English..... 5 00 7  
Red, Indian, American..... 3 00 6 1/2  
Red, Turkey..... 9 00 14  
Red, Tuscan..... 9 00 11  
Red, Venetian, American..... 100 b. 1.00 @ 1.25  
Sienna, Italian, Burnt and Powd..... 5 00 6 1/2  
Sienna, Ital., Burnt Lumps..... 1 1/2 @ 2 1/2  
Sienna, Ital., Raw, Powd..... 5 00 6 1/2  
Sienna, Ital., Raw Lumps..... 2 00 3 1/2  
Sienna, American, Raw and Powdered..... 1 1/2 @ 1 1/2  
Talc, French..... 1 1/2 @ 1 1/2  
Talc, American..... 1 00 1 1/2  
Terra Alba, Fr'ch, 7 100 b..... 30 00 1.00  
Terra Alba, English..... 50 00 60  
Terra Alba, American No. 1..... 70 00 75  
Terra Alba, American No. 2..... 40 00 50  
Umbur, Turkey, Bnt. and Powd..... 3 00 4  
Umbur, Turkey, Raw and Powdered..... 3 00 4  
Umbur, Turkey, B'w Lmps..... 3 00 4  
Umbur, Turkey, B'w Amer..... 1 1/2 @ 1 1/2  
Yellow, Chrome..... 10 00 25  
Vermilion, Americ. Lead..... 11 00 17  
Vermilion, Quicksilver, bulk..... 64 00 66  
Vermilion, Quicksilver, bags..... 65 00 67  
Vermilion Quicksilver, smaller pkgs..... 60 00 71  
Vermilion English Import..... 80 00 85

**Vermilion, imitation, Eng.**

Vermilion, Trieste..... 8 00 25  
Vermilion, Chinese..... 30 00 45  
Whiting, Common, 7 100 b..... 50 00 55  
Whiting, Gliders..... 50 00 55  
Zinc, American, dry..... 4 00 5  
Zinc, French, Red Seal..... 7 00 8 1/2  
Zinc, French, Green Seal..... 7 00 8 1/2  
Zinc, French, V. M. X..... 7 00 8 1/2  
Zinc, Antwerp, Red Seal..... 7 00 8 1/2  
Zinc, Antwerp, Green Seal..... 7 00 8 1/2  
Zinc, German, L. Z. O..... 7 00 8 1/2  
Zinc, V. M. in Poppy Oil, Seal, lots of 1 ton and over..... 10 00 11 1/2  
Zinc, V. M. in Poppy Oil, lots less than 1 ton..... 11 00 11 1/2  
Zinc, V. M. in Poppy Oil, lots of 1 ton and over..... 10 00 10 1/2  
Lots of less than 1 ton..... 10 00 10 1/2  
Discounts-French Zinc-Discounts to buyers of 10-bbl. lots of one or assorted grades, 1%; 25 bbls, 2%; 50 bbls, 4%. No discount allowed on less than bbl. lots.

**Colors in Oil.**

Blue, Chinese..... 35 00 40  
Blue, Prussian..... 30 00 45  
Blue, Ultramarine..... 12 00 15  
Brown, Vandyke..... 7 00 12  
Green, Chrome..... 8 00 13  
Green, Paris..... 16 00 19 1/2  
Sienna, Raw..... 7 00 14  
Sienna, Burnt..... 7 00 14  
Umbur Raw..... 7 00 14  
Umbur, Burnt..... 7 00 10

**Patty.**

In barrels and 1/2 bbls..... 1.35 @ 1.65  
In tubs..... .01% @ .01%  
In tin cans..... .01% @ .02%  
In bladders..... .01% @ .02%

**Spirits Turpentine.**

In regular bbls..... 33% @ ..  
In machine bbls..... 34 @ ..

**Glue.**

Low Grade..... 8 @ 10  
Cabinet..... 12 @ 14  
Medium White..... 12 @ 15  
Extra White..... 17 @ 20  
French..... 10 @ 22  
Smaller..... 10 @ 15  
Irish..... 12 @ ..

